

IMPLEMENTATION OF AN EVIDENCE-BASED DISCHARGE PLANNING PROGRAM  
FOR ADULT PATIENTS WITH DIABETES MELLITUS IN AN ACUTE CARE FACILITY

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## ABSTRACT

Diabetes Mellitus is associated with health complications and increasing healthcare utilization. These poor health outcomes may be reduced by incorporating evidence-based innovations in the discharge planning process to enhance essential self-care knowledge and skills of those with diabetes. Initiating Diabetes Self-Management Education (DSME) in the hospital with reinforcement in an outpatient setting may further promote positive health behaviors and delay negative outcomes. A diabetes-specific discharge planning Quality Improvement program was developed and implemented as a pilot project in five medical/surgical units at Maui Memorial Medical Center. The goals were to incorporate evidence-based innovations into this facility's current discharge process to safely transition diabetic adult patients from an inpatient to an outpatient setting, improve nursing DSME documentation, and increase outpatient diabetes education participation in the community.

Methods to assess the program outcomes included data collection and analysis from patient records, cross-sectional surveys, and provider surveys. Pre- and post-intervention data showed an increase in nursing DSME documentation rate after an assessment tool was utilized, which suggests a checklist-facilitated nursing compliance. Post-intervention data noted no increased participation in two pre-implementation community DSME programs. There was, however, an increase in the number of participants at Maui Memorial Medical Center's monthly diabetes support program. Several variables affect patient health education program participation, but this result suggests that a discharge planning specific for those with diabetes may have a positive influence on outpatient DSME program involvement.

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## **CHAPTER 1. EXECUTIVE SUMMARY**

### **Introduction**

Diabetes Mellitus (DM) is associated with increasing morbidity, mortality and healthcare cost (American Diabetes Association [ADA], 2013; Centers for Disease Control and Prevention [CDC], 2015). Hospitalizations and 30-day readmissions of those with DM are also more frequent (Brumm, Theisen, & Falciglia, 2016; Rubin, 2015; Sentell, Ahn, Miyamura, & Juarez, 2015). These poor health outcomes may be reduced by incorporating evidence-based innovations in the discharge (DC) planning process to enhance essential self-care knowledge and skills of those with diabetes. Given that in 2013, 21% of Maui Memorial Medical Center's (MMMC) admissions had diabetes, and in 2015, when the number of diabetic patients who were readmitted within 30 days of discharge increased from 163 in 2014 to 329, a diabetes-specific DC planning program was initiated. The purpose of this evidence-based practice (EBP) project was to implement and evaluate a DM-specific discharge planning program to safely transition diabetic adult patients at MMMC from inpatient to outpatient settings, improve nursing Diabetes Self-Management Education (DSME) documentation, and increase outpatient DSME participation.

### **Conceptual Framework**

The Stetler Model of Research Utilization was the conceptual model selected for this EBP innovation. This conceptual framework consists of five phases applicable to the conceptualization, evidence synthesis, implementation, and evaluation of an evidence-based DC planning practice change at MMMC (Schaffer, Sandau, & Diedrick, 2012).

### **Literature Review & Synthesis**

An electronic search was completed using PUBMED, CINAHL, ERIC, and Health Source: Nursing/Academic Edition. Expert committee reports, and national guidelines were also

reviewed. Key words included: “diabetes mellitus AND discharge planning,” “diabetes mellitus AND patient discharge”, “transitional care”, “diabetes mellitus AND patient education”, and “chronic disease management”. This project included 26 manuscripts, reports, and clinical practice guidelines. A critique and synthesis of the literature indicated that a combination of interventions incorporated in the DC planning process may provide diabetics with necessary self-care skills to safely transition from an inpatient to an outpatient setting. This diabetes-specific DC planning may also promote nursing DSME documentation and encourage outpatient education participation.

### **Innovation/Objectives**

Based on the evidence and identified gaps in MMMC’s DC planning process of adult patients with DM, a diabetes-specific DC program was planned, designed, and implemented as a pilot study. The innovation included: (1) using an Admission Education Assessment Checklist to assess patient/caregiver’s baseline knowledge of diabetes, (2) utilizing EB clinical guidelines to create a comprehensive diabetes education brochure given to diabetic patients on admission, and (3) incorporating DM in MMMC’s Medical Discharge Telephone Call-back Form. The expected outcomes included: an increased rate of DSME documentation to 80% and increase in number of outpatient DSME participants by 50%.

### **Methods**

#### **Design**

This EBP utilized a Quality Improvement (QI) approach in developing, implementing, and evaluating the effectiveness of a diabetes-specific DC planning program at MMMC. Seven Medical/Surgical nursing units were designated to be the setting of the project, but this was reduced to five because two units did not meet inclusion criteria. The target sample population

for this project were adult patients with DM (either Type 1 or Type 2), 18 years and above, admitted at MMMC who received the EBP innovation. Descriptive and statistical methods were utilized to calculate pre- (T1) and post-implementation (T2) data, and trends were compared.

## **Results**

The pilot study commenced on September 30, 2017 and completed December 31, 2017, a total of 92 days. At the end of the study, the DSME documentation rate was 84%. A total of 98 Diabetes Education Admission Checklists were completed. There was no noted increase in the number of participants in two community outpatient DSME programs. MMMC's diabetes support program, on the other hand, saw an increase in its monthly participants, from the 2016 baseline number of 7 to an average of 12.

### **Participants**

Participants of the study were Registered Nurses (RNs) at five Medical/Surgical Nursing Units at MMMC. These nurses were either full-time, part-time, float, or temporary/agency hires. Guided by the Diabetes Admission Education Checklist questionnaires, they asked inpatient adult diabetics specific questions on admission or transfer from other units. The DSME documentation rates of these nurses were tracked pre- and post-implementation of the project. Health Unit Coordinators (HUCs) or Unit Secretaries, either full-time or part-time MMMC staff, were also included in this project. Within 3 days post-hospital discharge, either RNs or HUCs asked outpatient adult diabetics specific questions regarding their diabetes, prompted by questions on the Medical Telephone Call-back Form. The number of outpatient DSME participants were noted pre-and post-implementation of the project.

### **Data analysis findings**

Trends in results were evaluated and reported in percentage of units. A month post-

implementation, only 11 Diabetes Admission Education Checklist were completed and DSME documentation rate was 48%. Fifty-four checklists were completed and an increase of DSME documentation rate to 92% was noted after a gift incentive was offered for completing the assessment tool. By the end of January 2018, a total of 98 checklists were completed, and the DSME rate was 84%. The increase in nursing DSME documentation of the pre-intervention data of 12% to a post-intervention rate of 84% suggests that an assessment tool can facilitate nursing compliance. There were only 20 completed Medical Telephone Call-back form. Of the three-baseline community DSME programs, only MMMC's monthly participation increased from seven in 2016 to an average of twelve participants, a 48% increase. This result suggests that the program may have facilitated outpatient DSME participation.

### **Discussion**

The results indicated that an assessment tool can facilitate nursing documentation. Providing incentive further encouraged compliance. Although this program was successful in increasing nursing DSME documentation, ongoing efforts are essential to ensure practice change sustainability. Results of outpatient participation, however, were heterogeneous. These results suggested that a discharge planning program that included assessing patients' baseline knowledge, providing inpatient DSME with a Diabetes Self-care Brochure, and adding diabetes to the Medical Telephone Call back form, had at least some positive impact on outpatient DSME participation.

### **Recommendations and implications**

The next steps for this diabetes-specific discharge planning program include presenting the results to MMMC's stakeholders and implementing this practice change hospital-wide. Collaborating with the MMMC Informatics will also be necessary to incorporate the assessment

tools in the EMR, meet meaningful use requirements, and ensure practice change sustainability. Ongoing engagement and education to nursing staff, other providers, and to patients will ensure that the most current evidence-based practice guidelines are utilized in diabetes care. Recognizing the challenges in diabetes care supports which outcomes of the project can be assessed and utilized as appropriate measures of nursing documentation compliance or diabetic patient DSME outpatient participation.

### **Limitations**

Inherent to any quality improvement project, this EBP has several limitations. A limitation of this project was the short period of implementation, which was less than four months. This may not fully engage the nursing staff and unit secretaries and could affect practice change sustainability. Other limitations included low levels of evidence in the body of literature reviewed. These were primarily based on performance improvement initiatives and reviews of literature, which may decrease generalizability. While best efforts were done to ensure reliability and validity of checklists and self-ratings, these untested instruments may limit the interpretation of the EBP findings. In addition, there was variability in the average daily, weekly, and monthly census of DM admissions at MMMC. Lastly, the baseline and the final medical record sample size of 25 medical records from five medical/surgical units may not adequately represent the population of diabetic patients being evaluated for their diabetes knowledge or having received Diabetes Self-Management Education.

## **CHAPTER 2: PROBLEM**

### **Introduction**

Diabetes Mellitus (DM) is associated with increasing morbidity, mortality and healthcare cost (American Diabetes Association [ADA], 2013; Centers for Disease Control and Prevention [CDC], 2015). Hospitalizations and 30-day readmissions of those with DM are also more frequent (Brumm, Theisen, & Falciglia, 2016; Rubin, 2015; Sentell, Ahn, Miyamura, & Juarez, 2015). These poor health outcomes, probably due to factors ranging from poor discharge (DC) planning and patients' lack of self-care skills, may be reduced by incorporating evidence-based innovations in the discharge planning process to enhance essential self-care knowledge and skills of those with diabetes.

An inpatient Diabetes Self-Management Education (DSME) program focused on self-management in the DC planning process may promote positive health behaviors (Chen, Ma, Chen, & Yermilov, 2012; Healy, Black, Harris, Lorenz, & Dungan, 2013). If DSME is further reinforced in an outpatient setting, patients' glucose control may improve, leading to reduction in healthcare utilization (ADA, 2016; Cook, et al., 2009; Hodge & Malaskovitz, 2014).

Prior to this project there was no DC planning process specific to the diabetes patient population at Maui Memorial Medical Center (MMMC). An evidence-based practice (EBP) approach was utilized to improve care for this population through early identification of gaps in their self-care knowledge and skills, increasing opportunities for education, and attempted to re-enforce inpatient education through outpatient education. The Stetler Model of Research Utilization was used to frame this clinical practice change and is the focus of the first part of this chapter. Next, the background and problem statement indicate the extent of the problem. Lastly, critique and synthesis of the literature, and objectives of the practice change are described.



## Conceptual Model

The Stetler Model of Research Utilization is the conceptual model selected for this evidence-based practice (EBP) proposal (see Table 1). This model utilizes a series of critical thinking and decision-making steps applicable to the conceptualization, synthesis of evidence, and implementation of an EBP change (Stetler, 2001; Schaffer, Sandau, & Diedrick, 2012). These steps ensure evidence applicability and feasibility to current practice that best fit the organization.

Table 1.

### *The Five Phases of the Stetler Model.*

Phase I	Preparation	Defines the purpose, background assessment, and search for evidence.
Phase II	Validation	Involves EBP literature synthesis and supporting evidence validation.
Phase III	Comparative evaluation/ decision-making	Compares evidence, proposes the project, and the decisions for implementation.
Phase IV	Translation/application	Involves evidence translation, system-wide, or pilot project trial implementation before system-wide implementation.
Phase V	Evaluation	Evaluates system-wide or pilot project effectiveness, and implementation/evaluation of practice-change across the system.

### **Phase I (Preparation)**

#### **Problem/Background**

Diabetes Mellitus is an endocrine disorder caused by either the failure of the pancreas to produce enough insulin (Type 1) or resistance to insulin (Type 2) (ADA, 2017; CDC, 2016). Both types can lead to elevated blood glucose level or hyperglycemia. Persistent chronic

hyperglycemia can lead to heart disease, stroke, blindness, kidney failure, wound infection, and limb amputations (CDC, 2016). Uncontrolled hyperglycemia can cause acute exacerbations of Diabetic Ketoacidosis (DKA) or Hyperosmolar Nonketotic Hyperosmolar Syndrome (HNS). Episodes of hypo/hyperglycemia may occur due to inappropriate use of diabetic medications and/or patients' lack of understanding of their illness (ADA, 2013; CDC, 2015; Hawai'i State Department of Health [HSDOH], 2014).

The above-mentioned complications are some of the reasons why diabetic patients are hospitalized and are being readmitted within 30 days of discharge more frequently than patients without diabetes (Brumm et al., 2016; Rubin, 2015; Sentell et al., 2015). In fact, an estimated 22% of all hospitalized patients have diabetes (Hirschmann & Bixby, 2014). Diabetes readmission rates, on the other hand, range from a low rate of 7.7% for Medicare and Medicaid patients to 20% for commercially insured patients (Chen et al., 2012). Over 55% of these readmissions may be due to ineffective inpatient care or poor DC planning (Chen et al., 2012).

This parallels data from Maui Memorial Medical Center indicating that in 2013, its DM admission rate was 21%. MMMC's number of readmissions of patients with DM was 163 in 2014 and 329 in 2015. In reviewing these cases, it was noted that MMMC has a generic discharge plan in place that caters only to patients' admitting chief complaints and diagnosis. There was no standardized diabetes-specific discharge process, and a diabetic patient's needs end up not being addressed, especially if that patient comes in for a separate serious diagnosis such as Acute Myocardial Infarction (AMI), Congestive Heart Failure, or Sepsis. Upon discharge, diabetic home medications were either missed or doses were not adjusted prior to discharge, leading to adverse consequences of hyper/hypoglycemia, and hospitalizations.

## **Diabetes and the Maui Community**

Diabetes worldwide is on the rise, just as it has increased in the United States (US). An estimated 382 million people worldwide, or 8.3% of adults, have diabetes (World Health Organization [WHO], 2016). In the US, there was a dramatic 385% increase in the prevalence of this disease from 1988 to 2014 (CDC, 2016). In 2014, 29.1 million, or 9.3% of the United States' (US) population, have diabetes; around 1 out of 11 of Americans (CDC, 2016). If this trend continues, the CDC (2016) estimates that 1 in 3 US adults will have DM in 2050.

This increase is also reflected in Hawai'i and the county of Maui. The proportion of adults with diabetes in this county increased from 5.2% in 2003 to 7.8% in 2010 (HAH, 2013). Its estimated population of 164,637 in 2015 is second only to O'ahu; but in 2011, this county was noted to have the highest rate of hospitalization due to short-term complications of diabetes (United States Bureau of Census, n.d.; Healthcare Association of Hawai'i [HAH], 2013).

For outpatient care, there is a private practice endocrinologist and a part-time Kaiser endocrinologist in the community. DSME programs/support groups available to the Maui community include the Maui County Office on Aging, Times Pharmacy (Honokōwai), Maui Medical Group, Kaiser Permanente, and Hu'i Nō Kē Ola Pono, an outpatient program providing health services to the Native Hawaiian Community in Maui. However, Maui County Office on Aging had only six participants in November 2016, MMMC had seven participants in January 2017, and Times Pharmacy (Honokōwai) DSME had only three in December 2016, indicating a lack of engagement in these outpatient programs. This also indicates that even these meager resources are not being utilized to their fullest extent.

For hospitalized diabetics in Maui County, inadequate community resources should be taken into consideration when preparing these patients for discharge because limited access to

healthcare can impact individual and community health (HAH, 2013). Inpatient strategies based on a diabetes-specific, culturally-individualized discharge process could mitigate this challenge. For example, while recuperating, patients can be provided with health promotion and prevention information. Physicians, nurses, and ancillary staff can also reinforce the importance of outpatient glycemic control and outpatient DSME participation to prevent comorbidities and hospitalizations.

### **Problem-focused Triggers**

Triggers are problems that initiate the need for change within the organization. Several problem-focused triggers were identified. As mentioned previously, the high diabetes admissions and readmissions are major concerns. In addition, a medical record review noted that five out of forty (12.5%) admissions had DKA within a three-week time frame on November 2016 to December 2016. Another review of twenty-five medical records noted that only three (12%) had documented diabetes education on admission. Also lacking are comprehensive DM educational materials. Typically, specific educational materials are printed for each educational topic identified and provided to patients/caregivers. In addition, while MMMC's Medical Discharge Follow-up phone call form includes Heart Failure (HF), DM is not listed. There is a distinct lack of a standardized discharge planning guideline for patients with DM at MMMC.

### **Organizational Priority**

Several factors were considered in determining the organizational priority of this evidence-based project. DM is associated with increasing morbidity and mortality (ADA, 2013; CDC, 2015). Blindness and limb amputations are disabling. Reno-vascular complications of this disease can cause life-threatening acute myocardial infarction (AMI) and stroke, as well as chronic kidney disease and renal failure. Hypo/hyperglycemia can be fatal.

Diabetic care is costly. In 2012, the total estimated cost of diagnosed diabetes in the US was \$245 billion, a 41% increase from the previous estimate of \$174 Billion in 2007. One out of every five healthcare dollars was spent on direct diabetes care, with more than 40% of diabetic medical care spent in inpatient care (ADA, 2013). In the state of Hawai'i, an estimated \$1.1 billion was spent on diabetes-related medical care in 2012, costing an average of around \$13,043.48 per diabetic person care (HSDOH, 2014). In addition, readmissions, especially within 30 days of discharge, can incur penalties and reduction in reimbursements (Moy, Chang, & Barrett, 2013).

Decreasing the number of preventable hospitalizations, especially within this timeframe, is a major goal of MMMC, as this could potentially improve healthcare quality and control healthcare costs. There is convincing evidence that a diabetes-specific discharge plan is effective in improving glucose control and promoting positive outcomes, including a reduction in health services use and readmissions (ADA, 2016; Cook et al., 2009; Hodge & Malaskovitz, 2014). With these factors in mind, it was in the best interest of MMMC to implement a discharge planning program for patients with diabetes.

### **Project Purpose**

The purpose of this Doctor of Nursing Practice (DNP) project was to implement an EB standardized discharge planning program for adult patients (18 years and above) with DM at MMMC. This was designed to improve diabetes inpatient to outpatient transition of care, promote positive patient outcomes, increase nursing DSME documentation, and increase outpatient diabetes education participation.

### **Literature Search**

The following databases were searched: PUBMED, CINAHL, ERIC, and Health Source:

Nursing/Academic Edition. Authority opinion, expert committee reports, and national guidelines were also reviewed. Search terms used include “discharge planning AND diabetes mellitus”, “patient discharge”, “transitional care”, “diabetes mellitus AND readmission reduction”, and “chronic disease management.” These were refined using MeSH, MAJR, and inclusion criteria (literature published within the last 10 years, adult participants, 18 years and older, English language), which reduced the number of publications. Letters to the editors and duplicate articles were also excluded. Not all included studies and interventions focused specifically on the discharge planning of diabetic patients and diabetes hospitalization reduction. Some interventional studies on Heart Failure were included and considered relevant to the DNP project due to their focus on quality care transition, improved chronic disease self-management, and improved hospital utilization.

The initial searches on DM and discharge planning returned upwards of 3,700 publications. Choosing only publications using discharge planning strategies that demonstrated significant positive outcomes and readmission reductions effects further reduced publications to 34; 26 of them were deemed feasible for the DNP project

## **Phase II (Validation)**

### **Literature Synthesis**

Mosby’s Level of Evidence model was used to grade the evidence and assess internal validity (Melnik, 2004). The articles critiqued included three Level I: systematic review or meta-analysis of all relevant Randomized controlled trial (RCT); two Level II: well-designed RCTs; one Level IV: non-experimental case controlled, cohort study, and longitudinal study; one Level V: systematic reviews of correlational studies; three Level VI: descriptive studies including: surveys, cross-sectional designs, and developmental designs; four Level VII: authority

opinion or expert committee reports; and twelve Performance Improvement (PI) studies and reviews of literature (see Table 2). It is important to note that being assigned a level from this model does not necessarily speak to the strength of the recommendations provided by the publication.

Table 2.

*The Number of Articles Critiqued and Synthesized using Mosby's Level of Evidence.*

Level of Evidence	Mosby's Level of Evidence	Number of Articles
I	Evidence from a systematic review or meta-analysis of all relevant RCTs	3
II	Evidence obtained from well-designed RCTs	2
III	Evidence obtained from well-designed controlled trials without randomization	0
IV	Evidence from well-designed case-control and cohort studies	1
V	Evidence from systematic reviews of correlational studies	1
VI	Evidence from single descriptive or qualitative studies	3
VII	Evidence from the opinion of authorities and/or reports of expert committees	4
Other	Evidence from the Performance Improvement; Review of Literature	12
Total		26

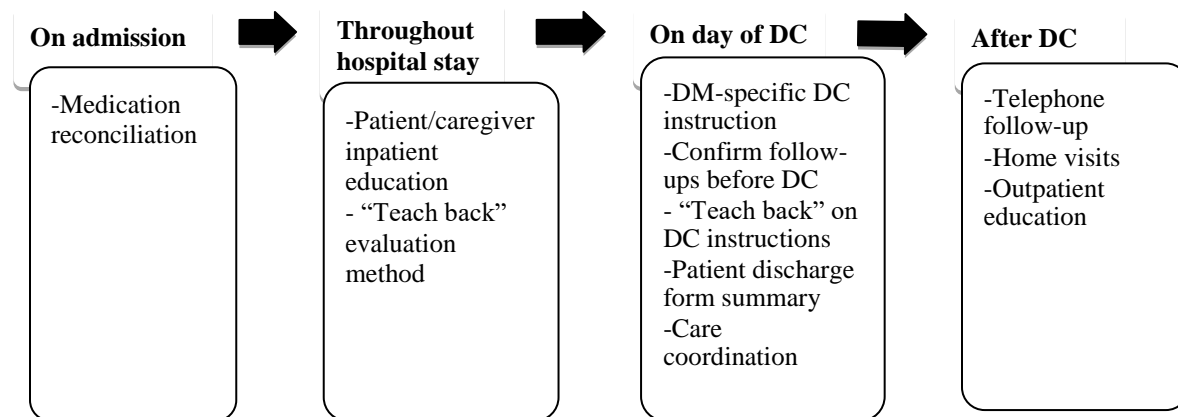
Seventeen out of the twenty-six articles were interventional studies that utilized multiple actions or interventions and are referred to as “interventional programs.” These were challenging to synthesize due to the heterogeneity of the interventions programs. Most studies, however, were noted to employ a multi-interventional approach to an effective discharge planning.

## **Literature Summary**

### **Key themes identified for effective diabetes discharge planning**

***General discharge planning measures.*** An effective hospital discharge process involves several interventions. No single intervention alone was effective in reducing the risk of

hospitalizations, but a combination of interventions during and after hospitalizations could reduce healthcare utilization (Hansen, Young, Hinami, Leung, and Williams, 2011; Raval et al. 2015) (see Figure 1).



*Figure 1. DM DC Planning Themes Correlated with Statistically Significant Reduction of Hospitalizations.*

***Agency for Healthcare Research and Quality recommendations.*** The Agency for Healthcare Research and Quality [AHRQ] (2013) also emphasized engaging patients and families to be partners in care. Patient and family’s involvement in the discharge planning process, from the beginning of the admission, can improve hospital quality care and safety, reduce outpatient adverse events, and prevent readmissions (AHRQ, 2013). This AHRQ strategy, which is in line with the Institute of Medicine [IOM] (2001) strategy to improve patient safety, focuses on engaging patients and families/caregivers in discharge planning.

***ADA/American Association of Diabetes Educators [AADE] Recommendations for Hospitalization.*** The ADA (2016) and the AADE (2012) recommend that discharge planning should be initiated on admission and updated as patient needs change. An individualized and structured discharge plan may reduce the length of hospital stay, readmission rates, and increase



patient satisfaction (ADA, 2016).

The transition from inpatient to outpatient setting can be precarious for patients (ADA, 2016). Hyperglycemia or hypoglycemia, for example, may occur if inpatient blood glucose levels were inconsistent or if diabetic home medications were changed and not adjusted at discharge. To reduce negative outcomes, the ADA (2016) recommends that patients should follow-up with their primary care provider, endocrinologist, or diabetes educator within one month of discharge. Direct communication to outpatient providers through concise discharge summaries can assist these providers as they assume care and facilitate outpatient care transitions safely.

***Diabetes-Specific Discharge Planning.*** Diabetes-specific measures incorporated into the existing discharge process can potentially prevent diabetic hospitalizations and readmissions, reduce the length of stay, and increase patient satisfaction. As per ADA's (2016) recommendation, Cook et al. (2009) and the Joint Commission (2016) supported the importance of a diabetes-specific discharge planning process that should begin on admission. Patients' educational needs should be promptly identified (Cook et al., 2009). Inpatient DSME should be provided based on baseline knowledge assessment. A clear and understandable post-discharge plan, medication changes, and changes that were discussed with the patient should be documented (Cook et al., 2009).

Confirming an outpatient follow-up with the PCP, endocrinologist, or diabetes educator is recommended within one month of discharge for those who had in-hospital hyperglycemia (ADA, 2016; Cook et al., 2009). Clear instructions about home medications and confirmed follow-up appointments at the time of discharge, as well as identification of barriers to follow-ups such as lack of primary care providers and seasonal visitors, are also recommended (ADA,

2016, Cook et al., 2009). These strategies were supported by two randomized controlled trial (RCT) studies by Balaban, Weissman, Samuel, and Woolhandler (2008) and Wexler et al. (2012), and a descriptive study performed by Hansen et al. (2011).

Systematic reviews by Hansen et al. (2011), Lambrinou, Kalogirou, Lamnisis, and Sourtzi (2012), and Rennke et al. (2013), along with an RCT study by Balaban et al. (2008) supported the importance of post-discharge telephone call follow-ups in preventing diabetic readmissions. Incorporating a discharge checklist can prompt nursing staff to confirm and document education provided to patients and assessments regarding patients' understanding of the discharge plan (Cook et al., 2009; Raval et al., 2015; Soong et al., 2013). A diabetes discharge checklist should include patient education on hypo/hyperglycemia, sick day management, and medication administration.

***Patient and caregiver education.*** Lack of knowledge and understanding of DC instructions were identified as readmission risk factors (Rubin, 2015; Rubin, Donnell-Jackson, Jhingan, Golden, & Paranjape, 2014; Wexler et al., 2012). Being hospitalized can be an opportunity to provide additional education when diabetics are in the hospital for other reasons, but most providers miss out on this chance. Patients were also not interested in learning about DM because they were in pain, overwhelmed by hospitalization, did not want insulin, or did not want to follow up after discharge (Wexler, 2012). Patient and caregiver's engagement is needed (Hardee et al, 2015; Pellet, 2016; Peter et al. 2015; Rodriguez et al., 2014).

One approach to increase patient engagement is using glycated hemoglobin (HbA1c) awareness to encourage patients to improve their blood glucose management (Dungan, 2012; Hodge & Malaskovitz, 2014). Another technique to improve engagement, discussed in a performance improvement study conducted in a tertiary magnet facility, was to use an enhanced

“teach-back,” also known as the “tell back” or the “show me” evaluation method.

Implementation of this method of education reduced HF patients’ readmission rate by 12% (Peter et al., 2015).

Another RCT by Hansen et al. (2011) and a descriptive study by Rodriguez et al. (2014) noted that an inpatient diabetes education, clear discharge instructions, and engaging patients in medication reconciliation and post-discharge planning reduced diabetes readmission rates. An RCT study by Wexler et al. (2012), a correlational study by Raval et al. (2015), and a descriptive study by Pellet (2016) also mentioned the importance of providing patient and caregiver education. The ADA (2016) and the Joint Commission (2016) highlighted the importance of a DSME program that supports formal education on diabetes management. The effectiveness of patient and caregiver outpatient education as a diabetes readmission reduction strategy was also noted in reviews by Dungan (2012), Hodge and Malaskovitz (2014), Soong et al. (2013), and Suzuki, Carmona, and Lima (2011).

An RTC study by Wexler et al. (2012) noted that inpatient diabetes management and education improved glycemic control of those with uncontrolled type 2 diabetes up to one year after discharge. Literature reviews by Hodge and Malaskovitz (2014) and Dungan (2012) also revealed that knowing HbA1c level can guide treatment during and after hospitalization and promote patients’ lifestyle changes and self-care.

A longitudinal study by Mokhtar et al. (2012) noted the benefits of inpatient education on blood sugar control. A descriptive study by Rubin et al. (2014) supported the readmission reducing benefit of an inpatient diabetes education, which engages patients in medication reconciliation, discharge instructions, and post-discharge planning.

***Nursing role in discharge planning.*** The literature noted the key role of nursing in

patient education and discharge planning. A systematic review and meta-analysis studies by Lambrinou et al. (2012) noted that Heart Failure management programs with nurse-led discharge planning reduced readmission rates. Other systematic reviews by Rennke et al. (2013) and Hansen et al. (2011) supported the importance of nurses in discharge scheduling and follow-up telephone calls. Literature reviews by Suzuki et al. (2011) and Cook et al. (2009) and a pilot study by Peter et al. (2015) found that hospital nursing staff had significant roles in inpatient education. An RTC study by Balaban et al. (2008) noted that nurses' discharge telephone follow-ups effectively reduced rehospitalization.

### **Weaknesses/Gaps/Limitations**

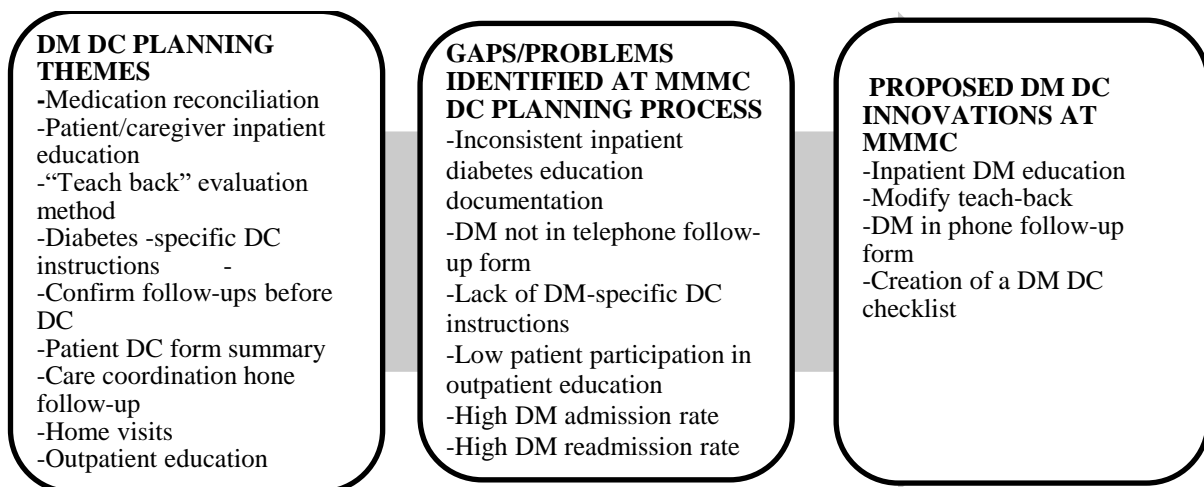
Several limitations were recognized in the literature search. Noted was a paucity of RCTs studies specific to discharge planning interventions that can reduce diabetes hospitalizations and readmissions. No single intervention was found most effective in reducing readmissions. No specific bundle of readmission reducing interventions specific for diabetics was found to be effective. Other limitations included low levels of evidence in the body of literature primarily based on expert reports, which may decrease generalizability. Literature reviews on diabetes readmission reduction interventions yielded retrospective studies and single-institution assessments of quality improvements rather than experimental designs.

Due to limited experimental design studies, articles on Heart Failure and general discharge planning and readmission prevention articles were included. There is a need for more prospective interventional programs targeting in-hospital interventions for reducing diabetes readmission rates. Broad prospective interventional studies are needed on reviewed retrospective and quality improvement studies of single interventions.

## Innovation/Objectives

The period between hospital discharge and the patient's first post-discharge follow-up visit is being increasingly recognized as a vulnerable phase for patients. Adverse events from new medications, new drug-drug interactions, and difficulties with follow-up visits and testing may lead to recurrence of symptoms, morbidity, and readmission. Inadequate support can also exacerbate complexity of transition of care from inpatient to hospital setting. Given the limited community resources for diabetics in Maui, there was an urgent need to implement an EB diabetes discharge guideline at MMMC to maximize patient benefits.

The evidence suggests that an effective diabetes discharge plan involves a combination of interventions that could promote positive patient outcomes, prevent hospitalization, and reduce readmission rates. While MMMC already has many of these interventions in place, problems with high DM admission and readmission rates still exist. Underlying causes include inconsistencies in DM education documentation, patient engagement, and post-discharge follow ups (see Figure 2).



*Figure 2.* Diabetes Discharge Planning Themes, Problems Identified in MMMC Discharge Planning Process, and Proposed Components of the Diabetes Discharge planning program.

As previously discussed, MMMC has high DM admission and increasing number of diabetic readmissions. Figure 2 further illustrates MMMC DC process gaps that include inconsistent inpatient diabetes education documentation, omission of DM from the telephone call-back form, and lack of DM-specific DC instruction.

Based on the identified trigger-problems and gaps in MMMC's discharge planning process, proposed strategies in the diabetes-specific discharge guideline include a nurse- initiated patient/caregiver assessment of diabetes baseline knowledge, inpatient education evaluation using a modified teach-back evaluation method, inclusion of diabetes in MMMC's Medical DC follow-up telephone call form, and creation of a DM DC checklist (Figure 2).

Assessment of patients' baseline knowledge by the nursing staff is important because low health literacy contributes to hospitalization and readmissions (Cook et al., 2009; Rubin, 2015). Inpatient education was noted by numerous studies to have positive effects on patients' blood sugar and glycated hemoglobin (HbA1c) level (Dungan, 2012; Hodge & Malaskovitz, 2014; Mokhtar et al., 2012; Rubin et al., 2014; Wexler et al., 2012). Patients were engaged through an active-learning, culturally-appropriate, empowerment-based approach regarding their medications, glucose monitoring, hyper/hypoglycemia recognition and treatment, medication reconciliation, and post-discharge planning reduced readmission risk for diabetics (Rubin et al., 2014; Naik et al., 2011).

In addition, a quality improvement study by Peter et al. (2015) noted that improved nurses' compliance in educating patients and their caregivers reduced readmission rates for patients with HF. Patient education was noted to be effective in reducing readmissions in chronic illnesses, such as HF, and could potentially prove to be effective in other chronic diseases, such as DM. Together with the three domains of learning through questions starting

with: what, why, and how, the Health Belief Model (HBM) will also be guiding the use of teach back. The HBM believes that individuals will take action to prevent, control, or treat a health problem if they perceive the problem to be severe; if they perceive that the action will yield or produce an expected positive outcome; or if they perceive negative consequences with non-adherence to recommended therapy (Becker and Maiman, 1975). HBM's focus is on disease prevention behaviors and will be useful in developing self-care activities such as diabetes management recommendations.

Balaban et al. (2008) noted a reduction in diabetes readmission rate through telephone follow-up. Including diabetes in MMMC's Medical Discharge Follow-up telephone call form and creating a DM-specific DC checklist that engages patient's understanding of home medications and self-care skills were other proposed components of the DC planning guideline.

## **Summary**

This chapter discussed the problem of diabetes hospitalization and readmission, as well as the background and evidence indicating how this problem can be solved. The conceptual framework and a review of literature were also presented.

The inpatient diabetes population is a high-risk group of patients who may be admitted for other acute care illnesses but continue to have diabetes care needs. Being in the hospital can be an opportunity to improve diabetes care, and gaps in patient diabetes knowledge can be identified and/or addressed. A diabetes-specific DC planning process initiated on admission with emphasis on early identification of patients in need of diabetes education ensures that diabetics know and understand self-management skills that will facilitate their safe and smooth transition from inpatient to outpatient settings. Coordinating care and involving primary care providers and community diabetes education resources is essential for providing adequate diabetes care for the

Maui community. These could potentially prevent negative outcomes and reduce healthcare utilization.

The support of stakeholders, such as physicians, other healthcare providers, nursing administration, and staff, is critical in determining whether a practice change in the DC process can lead to successful, sustainable outcomes. Incorporating providers' expertise as well as patient/system preferences with the EBP discharge process will be beneficial and fiscally advantageous. This can potentially promote positive patient outcomes such as increased patient compliance with discharge plans, increased inpatient/outpatient education, and reduction of adverse complications and hospitalizations.

The project team determined that a bundle of innovations applied to the project site. This practice bundle was refined following team deliberation and subsequent analysis of pre-implementation data. The details of the plans that guided the implementation of these EB strategies will be discussed in the next chapter.



## CHAPTER 3. METHODS

Based on the identified triggers and gaps in MMMC's discharge planning process, in addition to the literature synthesis discussed in Chapter 2, a practice bundle was developed containing the following methods: (1) assess patient/caregiver baseline diabetes knowledge using a diabetes education assessment tool (Appendix A), (2) utilize a comprehensive diabetes education brochure that enhances diabetic patients' self-care skills, and (3) use of a telephone call-back after discharge. Action items included: (1) implementing an inpatient diabetes education protocol, (2) utilizing EB clinical guidelines to create a comprehensive diabetes education patient brochure (Appendix B, p.1-2), and (3) incorporating diabetes in MMMC's Medical Discharge Follow-up Telephone Call-back Form (Appendix C, p.1-2).

### PICO and Clinical Question

The following PICO statement was developed to guide the EBP practice change (see Table 3). Adult patients, 18 years and older, with DM admitted at MMMC (P) will receive the EB discharge planning program interventions (I) as compared to current practice (C). The expected outcomes (O) include an 80% increase in nursing diabetes education documentation, and a 50% increase in outpatient education participation.

Table 3.

### PICO

Population	Intervention	Comparison	Outcomes
<ul style="list-style-type: none"><li>• Adults <math>\geq 18</math> years, with a diagnosis of DM at MMMC.</li></ul>	<p>Implementation of an EB discharge planning program that includes the following:</p> <ul style="list-style-type: none"><li>• Assessment of baseline diabetes knowledge using an Admission Education Assessment checklist</li><li>• Creation of EB comprehensive DM educational material</li><li>• Incorporation of DM in DC telephone call-back form</li></ul>	<ul style="list-style-type: none"><li>• Currently, no standardized DC process in place specific to patients with DM</li></ul>	<ul style="list-style-type: none"><li>• 80% increase in nursing diabetes education documentation</li><li>• 50% increase in outpatient education participation</li></ul>

## **Clinical Question**

The clinical question is: will the implementation of an EB diabetes-specific discharge planning program on adult patients with DM admitted at MMMC, improve nursing diabetes education documentation and increase outpatient education participation?

The components of this question were the following: a) what the best will be evidence-based care model to integrate into the admission and discharge processes of MMMC to address diabetes hospitalizations; b) what type of screening tool will be needed for admission and discharge of patients with diabetes admitted to MMMC; c) what type of diabetes education protocol design will best engage patients and caregivers; d) which set of discharge guidelines would be the most efficacious for diabetic patients at MMMC; and e) which metrics and quality indicators could be used to monitor outcomes (Dearholt & Dang, 2012)?

## **Design**

This practice change meets the Health Resources and Services Administration (HRSA) definition of a Quality Improvement process. A Quality Improvement program has four key principles: meeting the needs of a specific organization's health service delivery system, with focus on patients, on being part of the team, and on use of the data better improve patient outcomes (HRSA, 2011). This project followed a systematic approach in improving nursing care delivery and service in improving the health status of a targeted patient group, which the diabetes population.

## **Phase III (Comparative evaluation/decision-making)**

### **The Practice Change Description**

*Who, what, when, where, how.*

This project explored if the implementation of a DC planning program specific to

patients with diabetes would improve the rate of nursing DSME education documentation. The other objective was to increase participation in three community DSME outpatient programs. The project coordinator developed most instruments and tools, and descriptive and trend analyses were used to evaluate outcomes.

The goals of EBP project were to enhance efficacy, efficiency, and effectiveness in delivery and care to patients (Dearholt & Dang, 2012). The EBP approach was an appropriate design for developing and supporting a DC planning program for patients with diabetes because the outcome was to provide this population with quality care and health education to enhance their self-care skills post-hospital stay.

**Application of Users of the Innovation.** Knowledge, persuasion, decision, implementation, and confirmation are components of Rogers (2003) Innovation-Decision Process that influence innovation adaptation or rejection. This process is influenced by change agents, change champion/s, opinion leader/s, and other users (Rogers, 2003).

**Change agents.** Change agents, the content expert and project coordinator are individuals who operate interventions or actions with the main purpose of initiating behavior change and creating evident outcomes (Rogers, 2003). Change agents influence on opinion leaders may promote successful adaptation of an innovation.

For change agents to successfully encourage the spread of an innovation, persuading opinion leaders such as the MMC Director of Nursing (DON) was the easiest way to encourage positive attitudes toward an innovation. The Chief Nursing Executive (CNE) and the DON's approval provided the positive stimulus towards project implementation and adaptation.

**Change Champion.** The content expert of the DNP project is also the change champion. Her role is key to moving the innovation through the phases of initiation,

development, and implementation.

**Opinion Leaders.** Opinion leadership is the degree to which an individual is able to informally influence others' "attitudes or behaviors in a desired way with relative frequency" (Rogers, 2003, p. 362). In MMMC, the CNE, the DON, and the Clinical Diabetes Educator were opinion leaders with the status and influence to approve innovative ideas. They have the credibility to convince others to adopt an innovation, and a dynamic force in change diffusion.

**Others.** The Content Expert was the driving force of the innovation and provides tremendous assistance throughout the process. Additionally, the Nurse Managers' and Charge Nurses' approval influenced other staff innovation acceptance.

**Innovativeness and Adopter Categories.** Rogers' (2003) five categories of innovation are: innovators, early adopters, early majority, late adopters, and laggards. Each descriptive name points to their role in the change process where each group becomes a significant, accepting aspect of the innovation. The importance of this classification is to highlight the distinctive characteristics and needs of a potential adopter during the diffusion process. Personalizing marketing approach suited to the characteristics of each potential user encourage innovation adaptation.

**Innovators.** This category, the first 5% of adopters, are gatekeepers of new ideas into a system. Adoption of this group is a key point in the adoption process. The project expert is an "innovator" who values new evidence. Her adoption of the innovation and as a peer educator of early adopters generated acceptance of the innovation.

**Early Adopters.** This category, the next 10% of adopters, are opinion leaders who others look to for guidance (Rogers, 2003). Opinion leaders have more influence to move the diffusion process to acceptance by others than other individuals in the adopter category. The CNE, the

DON, and the Clinical Diabetes Educator have the influence and respect of providers and ancillary staff. They have the authority to initiate and accept a change in practice and gathering the respect of the early adopters was important.

**Early Majority.** This category is the next 35% who tend to interact frequently with peers. The Charge RNs, quality improvement staff and the Nurse Managers have strong interconnectedness within the system's interpersonal networks, and the nursing staff.

**Late Majority.** The late majority is the next 35% and tends to adopt from economic or social necessity due to the diffusion effect from influence of other adopters (Rogers, 2003). This group includes most of the RN staff in MMMC who, according to Rogers (2003) tend to be skeptics and wary of innovations.

**Laggards.** The laggards are in the final 15% of the adopters, tend to be more traditional, and are suspicious of change agents and innovations. They have set routines and their decisions are often made based on past experiences with previous innovations, and so tend to be slow to adopt (Rogers, 2003). The laggards at MMMC are a combination of RN staff, agency RNs, physicians, and unit secretaries who are suspicious of innovations and prefer to maintain the status quo. The late majority and laggards require patience and active listening of their reasons for being cautious. Continuously engaging them as valuable team members was essential to get them on board with the innovation. Because they see their resources as limited, proving that the process can be successful may influence them to change their mind. Presentation about the innovation on Performance Improvement meetings further exposed other adopters about the practice change.

The pilot study was an opportunity for potential adopters to provide feedbacks and suggestions and changes/ modifications before hospital-wide implementation. This was also an

opportunity for late majority and laggards to personally find out the advantages of the innovation.

### **Innovation characteristics**

In the context of this DNP project, the perceived innovation characteristics influence adopters/decision to adopt or reject a practice change (Rogers, 2003). The five characteristics of innovation include relative advantage, compatibility, complexity, trialability, and observability.

*Relative advantage* was defined as the degree to which the components of the discharge planning program was perceived to be better than the existing practice. Several relative advantages of this EB program include: convenience of incorporating EB practice in the Electronic Medical Record (EMR) admission and discharge processes, improved quality, and improved patient outcomes.

*Compatibility* was the perception that the “innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters” (Rogers, 2003, p.240). This practice change is in line with the key recommendation of Institute of Medicine’s (IOM) report, *Crossing the Quality Chasm* (2001), for redesigning health care with EB practice.

This QI project is compatible with the mission of MMMC in providing culturally-sensitive, quality health care in a collaborative, caring manner utilizing contemporary practices (Maui Memorial Medical Center, n.d.). In addition, an inpatient education is in line with a requirement to achieving the Joint Commission Advanced Disease-specific care certification for inpatient diabetes (The Joint Commission, 2017). Utilizing checklists will lessen confusion among staff and increase safety due to standardization of the discharge process. Less confusion and convenience facilitated the change.

*Complexity* was the perception that the initiative was “relatively difficult to understand and use” and apply in the current practice (Rogers, 2003, p.257). Nurses and other healthcare providers was exposed to new knowledge, including having to learn and correctly use the Diabetes Admission Education Assessment, the Medical Discharge Telephone call-back form with DM, and the Diabetes Education Brochure. Though this practice change has some challenges, the result demonstrated that utilizing an assessment tool can enhance delivery of inpatient education. The pre-printed Diabetes Self-care brochure is time-saving for nursing staff.

*Trialability* was the extent to which the practice change could be implemented or "trialed" on a small scale to determine its benefits for practice. This practice change was challenging because this required learning and behavioral change. The pilot study provided an opportunity for potential adopters to provide feedback and suggestions to any changes/ modifications before hospital-wide implementation.

*Observability* was the degree to which this program was visible to participants and those who were involved in providing the care. Cost-savings may not be realized by staff having direct patient care, but reduction in readmission rates could impact the financial health of this facility. Showcasing increased economic profitability of the innovation will positively affect the rate of adoption. As previously mentioned, a pilot study is an opportunity for a potential adopter to try out the innovation, hastening the likelihood of its adoption (Rogers, 2003). Through the pilot study in several Medical/Surgical units, other nursing units were made aware of the project benefits. An Intensive Care Unit Charge Nurse expressed interest in adopting the innovation.

### **Stakeholders**

Stakeholders are crucial to the success of an EBP practice change (CDC, 2011). Engaged stakeholders lend support and credibility and facilitated project success of the process. As

previously described, Rogers (2003) innovation adaptation process described these adopters. These included innovators, early adopters, early majority, late majority, and laggards. The innovators were the project expert and the project coordinator. The early adopters include the CNE, the DON, the Clinical Diabetes Educator, and the nurses who utilized the first 11 checklists. The early majority or late majority nurses were probably those who completed the 54 checklists in December 2017 or those who completed the 34 checklists in January 2018. The laggards, on the other hand, are known as skeptics and sometimes would wait to see if the innovation worked before adopting the idea (Rogers, 2003).

The MMMC administration, the CNE, and the DON were continuously updated throughout implementation and subsequent data analysis. The project expert, the Clinical Diabetes Educator, and the nurse managers were also constantly updated throughout the project. Their input and participation were critical for the project's success. The RN staff and HUCs played a bigger role in the implementation period. Gaining their full support was crucial during the pre-implementation training and the implementation phases, as well as the post-implementation stage. Patients, physicians, and other ancillary staff were also made aware of the innovation during the informative period and project implementation.

### **Marketing**

Marketing materials and a business plan were developed and shared during stakeholder meetings to ensure buy-in and adoption of the program innovations (see Appendix D). Several methods were utilized to involve stakeholders from the planning to the implementation and the subsequent evaluation stages and will continue through dissemination phases. These include both mass-media and interpersonal channels with one-on-one meetings. Mass-media strategy include placement of colorful, easy-to-read flyers in high-traffic areas throughout the facility, in addition



to postings of practice-change evaluation results on bulletin boards of each nursing unit to excite, attract attention, and inform documentation trends.

The email system was another mass-media strategy for project announcement although small group and one-on-one meetings were used as the main method of staff education. These interpersonal channels were utilized to enhance communication, promote a clear understanding of the project, and allow for immediate feedback to potential adopters, as well as gain insights on areas requiring modifications during the pilot study. These also allowed for more personal, one-to-one contact, ensured awareness of the project, hastened the dissemination of information, and conveyed the project's progress to stakeholders. Project presentations during unit morning huddles, scheduled Performance Improvement sessions, and nursing unit meetings were scheduled to persuade other late adopters, resistant to the practice change. Major benefits of the program from the nurse's perspective were also emphasized. Using active or performance-based techniques, a "hands-on" experience with charting during each individual's in-service was also utilized (Briscoe & Aboud, 2012, p. 619). Multiple communication processes and channels were utilized to involve stakeholders with the planning and implementation stages and will continue through the evaluation and the dissemination phases. The contents and format of these communication processes and channels are designed to maximize the understanding of results. Emphasis will be on full disclosure of the required balanced assessment of the results, advantages, limitations, and gaps for future improvements.

### **Project Setting.**

MMMC, an acute care, tertiary, 206-bed hospital located in the island of Maui, was the setting of this project. It was part of Hawai'i Health Systems Corporation (HHSC) until July 1, 2017 when MMMC became part of Kaiser Permanente. MMMC together with Kula Hospital,

Lanai Community Hospital, and associated clinics affiliated with Kaiser Permanente Hawai'i are now part of the Maui Health System (Maui Health System [MHS], n.d.).

The Maui Health System leadership team consists of the Hospital Administrator, the Director of Information Technology, Assistant Administrator for Quality, Safety and Performance, Chief Administrative Officer, Director of Compliance Operations, Assistant Administrator for Clinical Services, Chief Financial Officer, and Chief Nursing Executive (MHS, n.d.). The administrative staff includes department heads and unit head nurses. The DON leads the nursing department and reports directly to the CNE. Department heads and supervisors direct the clinical and non-clinical ancillary departments. Interdisciplinary collaboration provides direct and indirect services to patients and their families. Medical, nursing and other clinicians provide direct patient-centered care. In-house diagnostic and therapeutic services are provided directly or through contractual agreements that are billed and charged by the facility.

### **Process of Policy Change at MMMC**

Policy changes in MMMC are reviewed by the Provision of Care (POC) committee comprised of nurse leaders, physician champion, clinical informatics, and ancillary department managers. The POC committee coordinates quality improvement initiatives by communicating steps in changes and gathering and presenting feedback. The DON provides clerical, medical, and other departmental resources to ensure that the quality improvement efforts are successful. The project coordinator ensures that EB care is provided, collects pre/post-implementation data, and ensures that the project objectives are met.

### **The Practice Setting**

A medical-surgical unit is an area in a hospital where patients who are acutely ill with a variety of medical problems and diseases or are recovering from surgery receive around-the-

clock specialized medical and nursing care. Medical-surgical units may also include patients transitioning from an Intensive Care Unit (ICU) who have special needs and may require physiologic monitoring (Department of Veterans Affairs, 2011). Typically, one nurse is assigned for every four or six patients.

Patients in these medical-surgical units are cared for by hospitalists and attending physicians from Kaiser Permanente or Maui Medical Group. There is a nursing manager on each unit. Also, a nursing supervisor and a charge nurse is assigned for each shift. The nursing staff is composed of an established and seasoned group of individuals mixed with interim contract staff. These nurses are employed full time, part time or as contract workers to cover the needs of the unit. A full-time employee works 40 hours a week and a part-time employee works less than 40 hours. The contract workers are only in the unit for around 13 weeks, if there is a need to fill in for employees who are on leave, or if there is an increase in demand for unit census.

### **Sample Population**

The population sample included adult patients, 18 years and above, with a history or diagnosis of diabetes (either Type 1 or Type 2), admitted in any of the five medical/surgical units at MMMC. These patients received the interventions provided by the nursing staff in these units. A sample was a subset or “convenience” or “purposive” sampling of five documentation records of nursing staff in these five medical-surgical units.

### **Sample Size**

Five medical records from each of the five medical-surgical units, for a total of 25 charts, pre-and post-innovation implementation, were reviewed to note whether nurses documented the diabetes education that they had provided. Guided by the pre-implementation data collection tool (Appendix E), the baseline data was manually extracted, de-identified, and entered an Excel

spreadsheet. A repeat assessment of 25 charts, utilizing the post-implementation data collection tool (Appendix F), was then conducted post-innovation implementation. It was challenging to collect five medical records from each five medical/surgical units due to census variability.

### **Inclusion/Exclusion Criteria**

The inclusion criteria for this project were patients aged 18 years or older, with Type 1 or Type 2 DM, admitted in five Medical/surgical units at MMMC. Patients with a diagnosis of hyperglycemia but without a diagnosis of Type 1 or Type 2 DM were excluded from the sample. Patients younger than 18 years, and the Intensive Care units, Labor and Delivery, Postpartum units, and Medical/Surgical units that do not use the Medical Telephone Call-back form were also excluded. This QI program was planned to be conducted at seven 12–24 bed adult Medical/Surgical units at MMMC, but two did not meet inclusion criteria and so was ultimately implemented in only five of these areas. One of these units utilizes a Surgical checklist. The other unit is considered a Long-term Care unit and hardly admits or discharges patients.

### **Phase IV (Translation/Application)**

#### **Program Description**

##### ***Current Practice.***

The discharge planning process at MMMC is initiated on admission (MMMC, 2010). Depending on a patient's admitting diagnosis and identified needs, a plan of care is created which continue through discharge (MMMC, 2010) (see Appendix G). This discharge planning process includes nursing assessment of a patient/family/caregiver's educational needs upon admission. Through patient and family education, coping and self-care measures emphasize prevention of acute and chronic complications, future hospitalizations, and readmissions.

For those with DM, an identified educational need requires searching for and printing the

corresponding educational material and giving it to the patient/caregiver/family. Education provided to patients/family/caregivers was documented in the medical record and/or nursing notes. Risk factors for complications, hospitalizations, and readmissions as well as social barriers to health are further assessed and mitigated utilizing inputs from other disciplines including case managers, dietitian, or physical therapy.

The discharge order is entered in the Electronic Medical Record (EMR) by the Hospitalist/other prescribers (either from Kaiser Group or Maui Medical Group). They then complete the discharge form in the EMR. This form has the patient's diagnosis and discharge instructions that include the patient's diet, activity, medications to be taken at home, and follow-ups. Kaiser Hospitalists personally arrange follow-ups. Nursing will acknowledge the discharge order and confirm patients' outpatient follow-ups with their Primary Care Providers (PCPs).

On the day of the discharge, nurses will give prescriptions for any new medications, and will review discharge instructions and prescriptions with patient/family/caregiver. Forty-eight to seventy-two hours post-discharge, patients/family/caregiver will receive a telephone call-back from the RN or unit secretary/Hospital Unit Coordinators. Patients will be asked questions guided by prompts on a Medical Discharge Telephone |Call-back form.

***New Practice.***

Upon admission or transfer from another unit, patients with DM will have their baseline knowledge assessed by nursing staff utilizing the Diabetes Education Admission Checklist (Appendix A) with the following instructions:

- Ask the patient each question listed on the Diabetes Education Admission Checklist.
- Circle each topic that the patient does not know and needs education.

- Give the patient the Diabetes Self-Care Brochure (Appendix B, p.1-2) and place a checkmark on the appropriate topics in which they need education.
- For example, if the patient does not know how to handle a high blood glucose when sick, place a checkmark on sick day rules. If the patient already knows signs and symptoms of hypoglycemia, there is no need to spend time teaching this topic.
- In the EMR, add *Diabetes* to the plan of care.
- Go to Education in the EMR and indicate that education on *Diabetes Self-Care Education* was completed.

Nursing will assess on whether a Clinical Diabetes Educator referral is needed or not. Reasons for referral include but not limited to patients' answers to questions on the assessment tool. Being a newly diagnosed diabetic, admission from complications of DM such as DKA or hypoglycemia or being readmitted within 30-days due to DM-related complications such non-healing wounds, limb amputations, or DKA, are other reasons for Clinical Diabetes Educator referral. Forty-eight to seventy-two hours after discharge, those with DM will also receive additional questions specific to their diagnosis guided with DM specific questions on the new Medical Discharge Telephone Call-back form (Appendix C, p.1-2).

**Anticipated impact of the practice change on providers and patients.** This EB practice change include a combination of interventions:

1. ***Utilize the Diabetes Education Admission Checklist.*** The Diabetes Education Admission Checklist will serve as prompts to assist nurses in identifying who requires inpatient education or referral to the Clinical Diabetes Educator. Identification of diabetic topic areas that need emphasis will encourage education documentation.
2. ***Creation of comprehensive Diabetes Education Brochure.*** The comprehensive

Diabetes Education Information brochure can further facilitate communication between the provider and patient and guide the patient education part of the hospital stay (Clark, N. (2016). This will be a valuable document for nurses to use during inpatient education. Since this is already pre-printed, this will be time-saving for nurses as they do not need to search for appropriate educational material for the identified patient learning need. This brochure can also enhance the patient's understanding of their diabetes management plan. As a patient reference at home, this can potentially increase their capacity to self-manage their chronic condition.

3. ***Incorporate DM in the Medical Discharge Telephone Call-back form.*** The post-discharge follow-up phone call will allow the opportunity for questions, to clarify patient and caregiver misunderstandings, and to address any concerns and discrepancies in the discharge plan. Incorporating DM in the Medical Discharge Telephone Call-back form will also be an opportunity to remind patients of the benefits of diabetes outpatient education programs.

## **Definitions**

### ***Outcomes at baseline (T1):***

- 1) A baseline outcome, collected in October 2016, is defined as the rate of DSME provided by registered nurses on diabetic patients on admission before the EBP implementation (three out of 25 or 12%).
- 2) Additional T1 data points include the following:
  - Pre-implementation number of participants (MMMC DM support program) (7).
  - Pre-implementation number of participants (Maui County Office on Aging) (6).
  - Pre-implementation number of participants (Times Pharmacy Honokōwai) (3).

### ***Interventions.***

The definition of the interventions in this EBP program include the following:

1. Admission education checklist is defined as a cognitive aid to guide nursing staff through accurate task completion of assessing patients' baseline knowledge of diabetes.
2. Diabetes Self-Management Education is defined as the process of facilitating knowledge, skill, and ability necessary for diabetes self-care.
3. Diabetes Education brochure is defined as patient education handout on diabetes with written information about the disease and instructions on self-management.
4. Medical Discharge Telephone Call-back form is defined as a telephone call script utilized to call patients 2 to 3 days after discharge.

### ***Outcomes at T2 include the following:***

1. Increase in registered nurses' documentation of DSME to 80%
  - **Nursing documentation** is defined as any written or electronically generated information describing the care or service provided to a patient by a nursing staff.
  - **Diabetes Self-Management Education (DSME)** is defined as the process of facilitating knowledge, skill, and ability necessary for diabetes self-care.
  - **Registered nursing staff** is defined as licensed professional nurses who provide direct patient care in medical-surgical units, who work full time or part time.
2. 50% increase rate of participation in outpatient diabetes education program
  - **Participation** is defined as the completion of a Diabetes Self-Management program given two and a half hours once a week for six weeks.



Additional terms used in this project include the following:

- ◆ **Diabetic patients** are defined as individuals having diabetes
- ◆ **Diabetes Mellitus** is defined as having either a glycated hemoglobin or hemoglobin A1c (HbA1c) of greater than or equal to 6.5%; a fasting blood glucose of greater than or equal to 126 mg/dl; or an Oral Glucose Tolerance Test (OGTT) at two-hour blood glucose of greater than or equal to 200 mg/dl (ADA, 2017).
  - HbA1c measures the average blood glucose for the past two to three months.
  - Fasting Plasma Glucose (FPG) is blood glucose level taken at least at least eight hours after last meal or drink (except water).
  - Oral Glucose Tolerance Test is a two-hour test that checks blood glucose levels before and two hours after drinking a special drink with 75g of sugar.
- **Outpatient diabetes education program** is defined as a structured comprehensive Diabetes Self-Management Education learning course provided by certified diabetes educators designed to provide an individual with the knowledge, skill, and ability necessary for diabetes self-care. The curriculum modules address healthy eating, being active, monitoring blood sugar, taking drugs, and reducing risks.

### **Evaluation Question**

The evaluation question of this EBP is: Can the implementation of a diabetes-specific discharge planning program for adult patients, 18 years and older, with DM (either Type 1 or 2) at an acute care facility, promote an increase in nursing DSME documentation rate and increase in the number of outpatient DSME participants, within a three-month time frame?

The *SMART Criteria for Evaluation Questions* guided the evaluation question construction (see Appendix H). The evaluation design of this EBP is both an impact evaluation

and a process evaluation as defined by the CDC (2011) *Introduction to Program Evaluation for Public Health Programs*. An impact evaluation, also called outcome or effectiveness evaluations, explores the relationship between the intervention and the desired outcome. For example, the expected outcome of an admission education assessment checklist by nursing staff is the 80% increase in nursing documentation of diabetes education. This process evaluation will document the extent to which nursing staff implements the interventions of this EB diabetes-specific discharge planning program.

To obtain RNs' pre-implementation baseline knowledge of DM discharge planning, a five-question survey was administered to nurses in the five medical/surgical units before and after each in service (see Appendix I). The percent of correct answers among these nurses was compared to the scores from the baseline assessment (Appendix J). In-services continued throughout and after the implementation stage.

Table 4.

*Data Sources and Elements.*

Outcomes		Data Source	Data Element
Nursing DSME documentation	EMR		Records of patients with diagnosis of DM
Participation in an outpatient DSME program	Provider survey • Maui County Office on Aging DSME program • Maui Memorial Medical Center Diabetes support group • Times Maui (Honokōwai)		Number of participants

## Data management

### Data sources and data elements.

The EMR was the data source for the rate of nursing DSME education provided to patients with DM. The Maui County Office on Aging DSME program, Maui Memorial Medical Center Diabetes support group, and Times Maui (Honokōwai) were the data source for the number of

diabetic participants in an outpatient DSME session (see Table 4).

### **Data collection procedures**

To assess changes in nursing and diabetic patients' knowledge and attitudes and determine if objectives of the project are met, baseline measurements and target outcomes were compared. For the baseline and post-implementation nursing documentation rates of DSME provided, the EMR system was utilized to conduct retrospective chart reviews on five charts from five medical/surgical units for a total of 25 charts.

To ensure patients' confidentiality, person-identifiable information was not collected during data extraction and Excel recording. Descriptive statistics and trend analysis were conducted to track the impact of the interventions by conducting random chart reviews a month post-implementation of the EBP change. Additional chart reviews were conducted on the second and third month after the project initiation.

### ***Data analysis.***

Information collected were organized, tabulated, and summarized and then compared with baseline information. The Excel computer program was utilized. Data regarding the number of patients with DM who received diabetes education was compared before and after EBP implementation. Comparisons were made by using descriptive statistics to compare baseline (T1) measurement with results after the intervention (T2).

### **Resources**

The DNP project meets CDC (2011) feasibility standards for program evaluations and had the necessary resources needed for the planned. The budget for gift incentives was \$500.00. The folders with printed instructions that were provided on five Medical/surgical units were approximately \$3.00 for a total of \$15.00. Since the presentations took place during morning

huddles and between shift changes, there was no cost impact for the facility. Since the hours are graduate practicum program requirement, no work-related payment for the project was received. Laptops and projectors needed to make presentations were readily available. Space was not an issue. The medical/surgical units in the facility were some of the settings for project presentation during unit services and meeting rooms for other stakeholder meetings.

A cost-analysis of the project was presented to the DON, project expert, and Clinical Diabetes Educator (see Appendix K). The approximate cost of the innovation was an additional \$12,407.86 per year on staff pay, and cost of paper and ink. This is minuscule compared to the cost associated with diabetes care which was over \$13,000.00 for each hospitalized diabetic in 2012 (ADA, 2013). With 2,100 diabetic patients admitted in 2013, preventing these hospitalizations will save the facility over \$21,000, 000 per year.

### **Human Subject Considerations**

This EBP project is designed as a QI initiative and not as a controlled trial. Thus, there are no plans to randomize patients to different treatments. In addition, person-identifiable information will not be collected. Only standard, EBP will be utilized and data will be reported as an aggregate of the population.

Primary ethical principles that govern research with human subjects, such as autonomy, non-maleficence, beneficence, and justice, will be applied (Callahan & Hobbs, 1998). Throughout the continuum of care and during the EB practice change, rights and autonomy of patients will be honored and respected.

The ethical principle of non-maleficence will be emphasized. Patient safety will never be sacrificed for research ends; patients will not be subject to additional risk beyond justified, standard practice. Since this is an improvement of practice, there is only benefit or beneficence

to both patients/families and staff. Patient care will not be manipulated; however, it is being revised. Patients have provided consent for treatment when admitted to MMMC; additional informed consent, therefore, will not be required for this project.

The author has completed the University of Hawaii required Collaborative Institutional Training Initiative (CITI) course in Human Subjects Protection. A committee consisting of faculty and clinical experts reviewed this EBP project to ensure there is adequate human subjects protection.

This EBP proposal is also in line with the Nursing Code of Ethics 7.1 provision, advancing the “profession through knowledge development, evaluation, dissemination, and application to practice” (American Nurses Association [ANA], 2015, p. 43.). As healthcare providers, nurses have an obligation to provide care based on recent scientific research. As members of an organization, their responsibility is to ensure that the healthcare organization has up-to-date practice standards to maximize possible benefits of current research. Utilizing EBP in discharge planning to benefit patients with DM accomplishes the duty to do no harm and do what is good.

This EBP plan will provide tools for nurses to use in caring for patients with DM. Nurses have the professional autonomy to tailor their practice to meet individual patient needs. Providing education according to the patient’s level of understanding of their illness is in line with the AADE (2012) and the AHRQ (2013) recommendations. Also, the discharge plan that is tailored to each patient meets the American Diabetes Association (2016) standards for Diabetes Care in the Hospital.

### ***Project TimeLine.***

Phase III of this project started on the mid-January 2017 and ended in the middle of May

2017 (see Appendix L). Engaging stakeholders was critical from the time when details of the interventions were created and finalized to the collection and analysis of credible evidence and data, through the conceptualization and confirmation of the evaluation design.

After MMMC became part of Kaiser Permanente in July of 2017, the innovation was presented for approval to the new Chief Nursing Executive, DON, Clinical Diabetes Coordinator, and Point of Care Committee. To provide staff enough time to adjust to the new EMR system, the pilot study commenced the end of September through December 2017.

Pilot project's effectiveness evaluation (Phase V) was performed throughout the months of February and March 2018. Results of the study will then be presented to stakeholders. System-wide implementation is expected to begin May 2018.

## **Limitations**

This project has several limitations. A limitation was the baseline chart sample size. Five charts from five medical/surgical nursing units were reviewed over a two-week period, for a total of 25 charts. Moreover, not all patient characteristics will be controlled. This may not adequately represent the population of charts from diabetic patient who received diabetes education.

Another limitation was the use of checklists and self-ratings. While best efforts were made to ensure reliability and validity, these were untested instruments which may limit the interpretation of the findings.

It is also difficult to conclude if education is always accurately documented or not. It is possible that RN's providing patient education missed charting the education provided. It is also possible that nurses may not have provided patient education but charted as though they did. Despite efforts to allocate enough time for each phase of the project, the implementation time-frame of three months may not be sufficient to fully engage the nursing staff, promote innovation

adaptation and practice change sustainability.

### **Summary**

This chapter described the methods used for the EBP change and was guided by the Stetler Model of Research Utilization conceptual framework. Information on the setting, sample, and tools to be utilized were also described. This chapter further explained data collection, project procedures, evaluation plans, ethical consideration, and limitations.

The data presented here suggests that MMMC is in a good position to enhance DM care and safely transition diabetic patients from the hospital to outpatient setting through the implementation of a standardized discharge planning program. This EBP project has the potential to improve MMMC's healthcare quality, decrease healthcare costs, and possibly reduce negative diabetic patient outcomes.

## **CHAPTER 4. RESULTS**

### **Phase V (Evaluation)**

#### **Evolution of the Project**

The QI project started with the project coordinator and project expert meeting with the MMMC DON, who provided support for its initiation. The MMMC became a part of Kaiser Permanente in July 2017, which required plan approval from Kaiser's Chief Nursing Executive and DON. The content expert of the project, the MMMC's Clinical Diabetes Educator, assumed another position, requiring project support from the new Clinical Diabetes Educator. The project committee approved the innovation implementation on August 2017. On September 2017, the project plan was presented and approved for implementation by the MMMC POC. The Diabetes Admission Education Checklist is now Form 300-xxxx. The Diabetes Self-care Education brochure is also Form 300-xxxx and the Medical Telephone Call-back Form is Form DC0052.

The EMR system also changed from Sorian to EPIC, which required changes in the implementation process of the Diabetes Admission Education checklist. This assessment tool was previously introduced by the project expert in an uncompleted pilot study in a Medical/Surgical unit at the MMMC.

Before the initiation of the study, 3 RNs roleplayed the questionnaires. First was with a non-RN staff, who was a competent diabetic. Another RN utilized the tool with an inpatient newly diagnosed diabetic. Guided by the checklist, the project coordinator asked a participant from MMMC's diabetes support group. The assessment tool completion process took less than five minutes or a little over 10 minutes depending on the patients' level of understanding, orientation, and DSME knowledge.

The same MMMC support group gave feedback on the Diabetes Self-care brochure.



Evaluation of the educational brochure ranged from fair to excellent with a suggestion of using other languages or dialects in the future (see Appendix M). The Diabetes Self-care brochure, the Diabetes Admission Education Checklist, and the Medical Discharge Follow-up phone call form have been modified. Final versions were submitted to the compliance officer for printing on the first week of February 2018. At the time of this report, there is still uncertainty on whether these forms should be discarded or sent to HIM, scanned, and kept as a part of the patients' medical record.

Nursing and unit HUCs were engaged through the marketing and business plan. In-services to 120 out of 145 nursing staff and 10 Unit Secretaries in 5 Medical/Surgical units were carried out through education sessions. For reference, each unit was also given the written program instructions containing colored and eye-catching illustrations of the new workflow process. Pre and post in-service education quiz on a sample of 50 staff noted a knowledge increase on the purpose and objectives of the project (Appendix J).

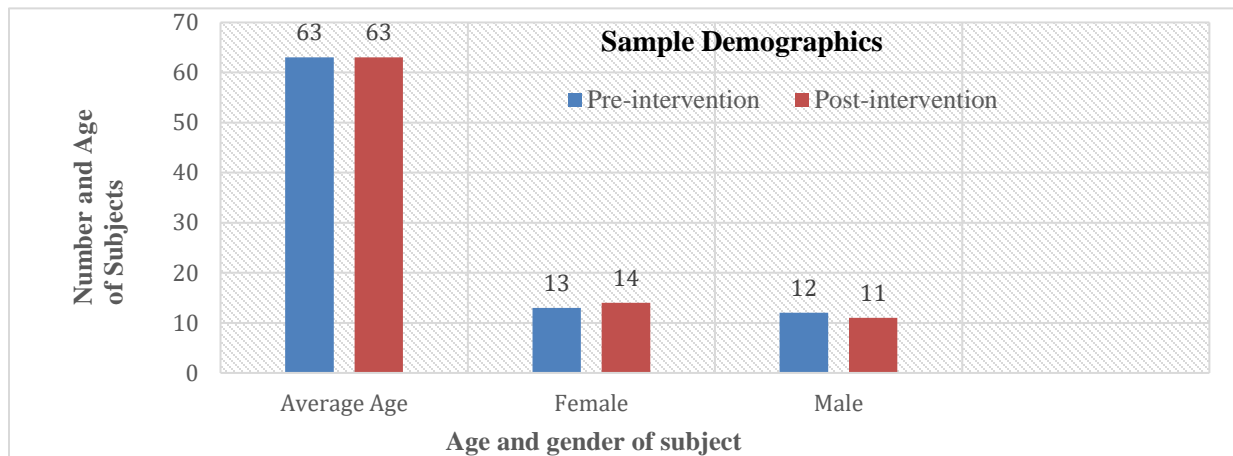
### **Objectives**

The purpose of this EBP change was to explore if the implementation of a discharge planning program to standardize the care of adults with diabetes would improve nursing education documentation to 80%. Further, it explored if the creation of an engaging educational material with a list of DSME program providers in the community, and the addition of DM in the Medical Telephone Call-back form will increase outpatient education participation by 50%.

### **Sample**

Pre-implementation data for this project was from the medical records of 25 diabetic patients admitted at MMMC between September 2016 and October of 2016. Post-

implementation data was also from the medical reviews of 25 diabetic patients admitted the last two weeks of January 2018. Pre-and post-implementation data showed that the average age was 63 years old. These admitted diabetic patients were mostly females (13 pre-implementation and 14 post-implementations (Figure 3).



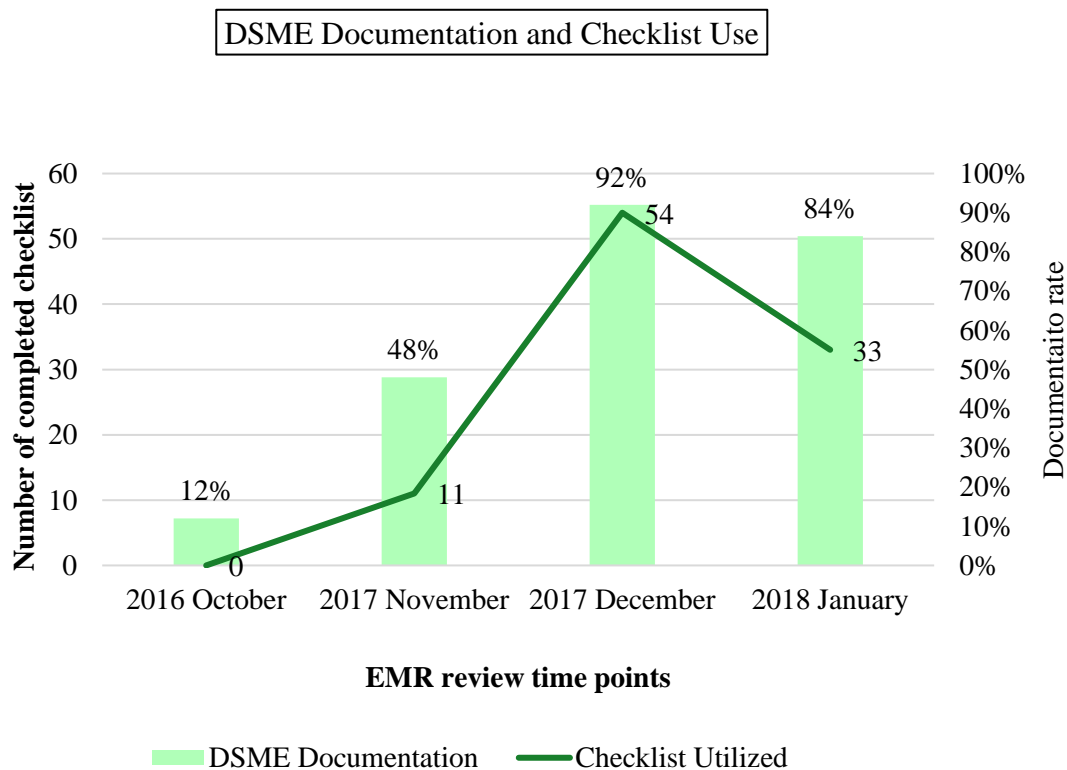
*Figure 3. Demographics of Sample Participant Pre-and Post-implementation.*

The admitting diagnosis of these patients ranged from infection to falls with the most common being cellulitis, hypertension, and CHF. The ethnic background of these patients was not gathered pre-implementation. Upon post- implementation review, this population was noted to be mostly Native Hawaiians, Filipinos, and Japanese.

### **Data Analyses Findings**

Upon review of the post-implementation medical records, it was noted that 4 out of 25 nurses who documented DSME did not utilize the assessment tool. It is possible that these nurses became familiar with specific questions to ask without prompts from the assessment tool. It is also possible that these nurses were aware of the ADA inpatient requirements and the facility standards of diabetes care, had assessed patients' baseline knowledge without prompts from the checklist and documented the DSME they provided.

Diabetes baseline knowledge, according to the Discharge Planning Program guideline, must be assessed upon patient's admission or transfer from other units. Education provided must then be documented in the EMR. The DSME documentation results reflected nurses' adherence in following the program recommendations. Figure 4 summarizes the percentage of how many times nurses documented the DSME they provided compared to the pre-implementation data.



*Figure 4.* Nursing DSME Documentation Pre-and Post -implementation with Corresponding Checklist Utilization.

As indicated in Figure 5, there is a 25% increase in the nursing DSME documentation rate compared to the previous year. The documentation rate almost doubled (92%) in the third month post-implementation. The rate in January 2018 was 84%. The trend in changes in the use of the assessment tool is also summarized in Figure 5. In the first two months after the project

was initiated, only 11 nurses utilized the checklist. The number of checklist utilized then increased to 54 in December 2017 but went down to 33 in January 2018.

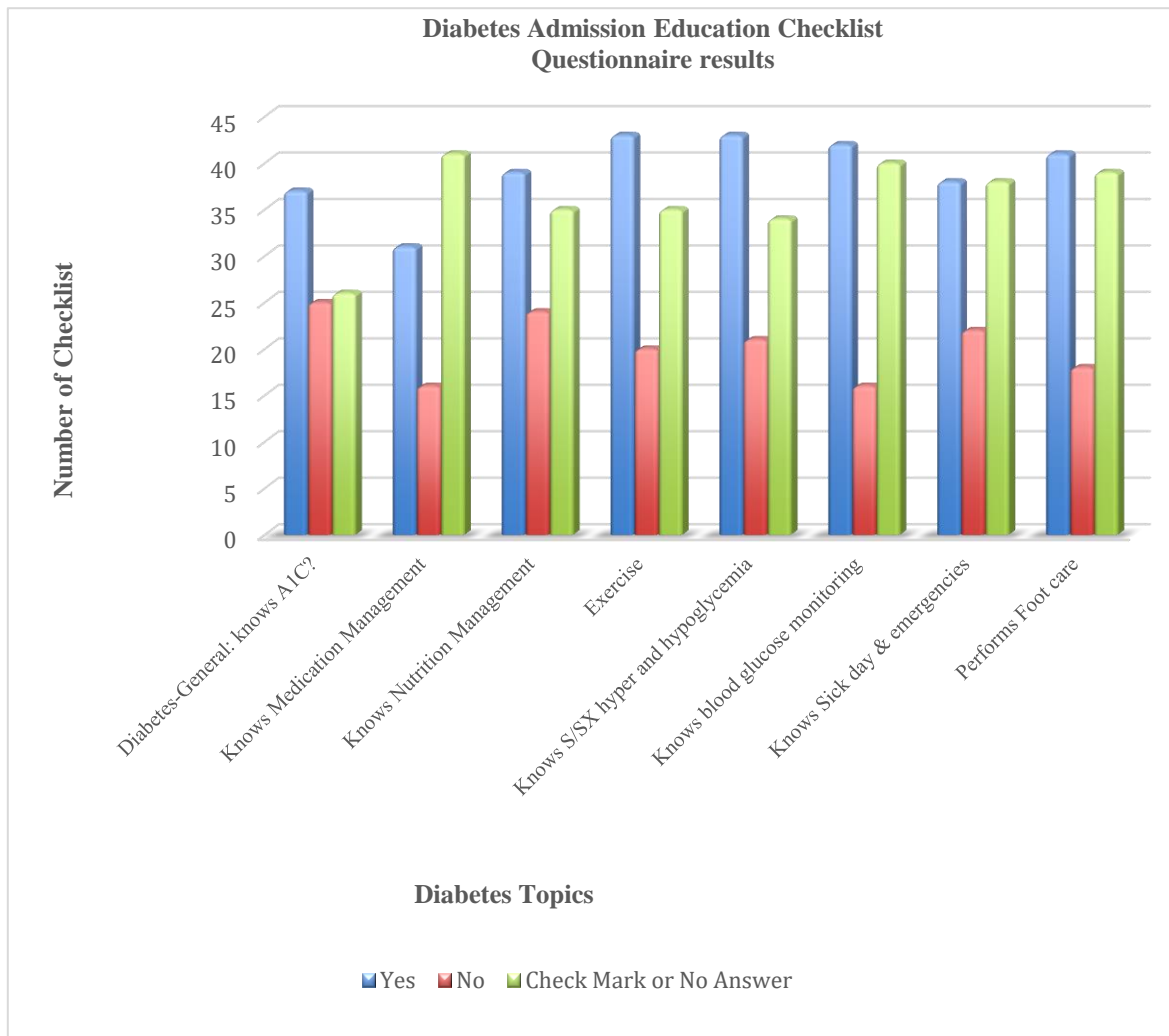
Only a handful of nurses initially utilized the checklists. The documentation rate was 48% in November 2017. Providing “incentive to engage with the intervention” can facilitate behavior change and stirring competition among groups further promotes change adaptation (Briscoe & Aboud, 2012). Gift incentive was announced, and an increase in both checklist use and DSME documentation rate was noted. A Pizza party was also offered to nursing units with nursing documentation over 90% on three chart reviews. Nurse managers were updated with nursing DSME documentation rates, and results were posted on each unit’s bulletin boards, nurses’ lounge, and in other high traffic areas.

### **Diabetes Education Assessment Tool**

The purpose of the Diabetes Admission Education checklist was to identify diabetic patients’ self-management knowledge. Based on these identified needs, nurses provided DSME and documented the education they provided in the EMR. To reinforce the education given to patients, nurses also provided the pre-printed Diabetes Self-Care Brochure. Additional educational materials were printed if patients needed more detailed information. Recommended to be completed during admission and on transfer from other units, nurses needed reminders to ensure that their assigned diabetic patients’ baseline self-care knowledge were assessed and documented. This assessment tool, however, evolved with some queries and areas modified such as ensuring nursing signature and date being incorporated.

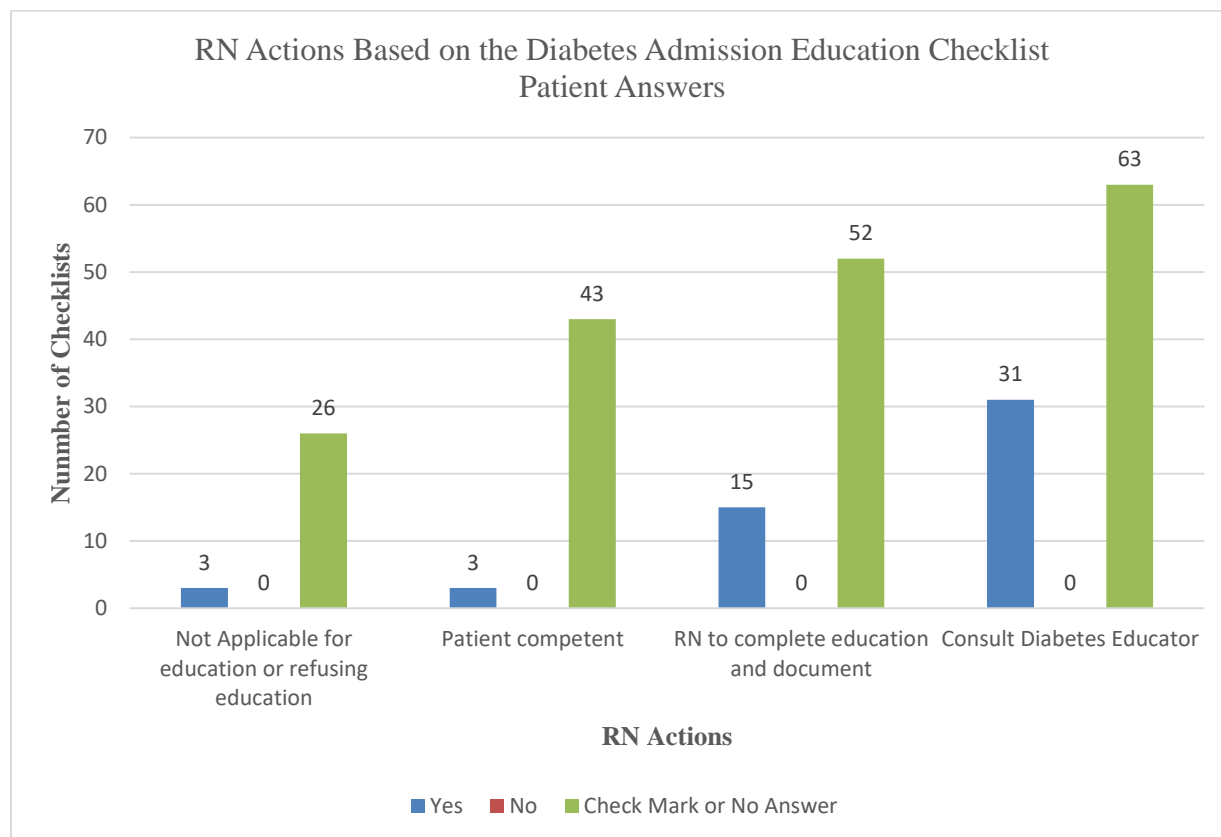
From these questionnaires, patients were asked about their general self-care knowledge of diabetes including HbA1c levels, medications, exercise, meal plan, signs and symptoms of hyper or hypoglycemia, the importance of blood glucose monitoring, sick days and emergencies, and

foot care. An initial assessment of the utilized checklists noted that seventy-six checklists had attached patients' information, 21 had handwritten patients' names, and one had no identification. Not all questions had answers. Some only had check marks, while others had "yes" or "no". This made accurate and conclusive analysis of data challenging. These checklists revealed critical information on patients' self-care knowledge of their illness such as HbA1c



knowledge. As illustrated on Figure 5, a substantial number of patients did not even know their HbA1C patients. This figure could be higher considering that 25 checklists had no answers or had only check marks.

*Figure 5.* Diabetes Admission Education Checklist Questionnaire results illustrating diabetes topics that were assessed using the assessment tool (n=98).



*Figure 6.* RN actions based on patients answers of the Diabetes Admission Education Checklist questions.

The Diabetes Admission Education Checklist provides RNs the opportunity to decide if patients needed referral to the Clinical Diabetes Educator for further education. These RN assessments and actions depend on patients answers of the assessment tool’s questionnaires. If a diabetic answered all the questions “correctly”, this patient is considered “competent” and no further education is needed. If additional education is needed, then this patient needs a Clinical Diabetes Education referral. As noted in Figure 6, RNs noted that 31 patients needed further

CDE education. The number of diabetics requiring further education was probably more than 31, considering that 63 of these checklists had no answers or had only checkmarks.

### Outpatient Education Participation

It was anticipated that the addition of diabetes in the Medical Telephone Call back form would increase the participation rates of outpatient DSME programs. The results, however, were not homogeneous (see Figure 7). The Maui County Office on Aging cancelled its February 2018 program and the Times pharmacy (Honokōwai) had no participants since April 2017. The MMMC DM support group, on the other hand, noted an increase in its participants.

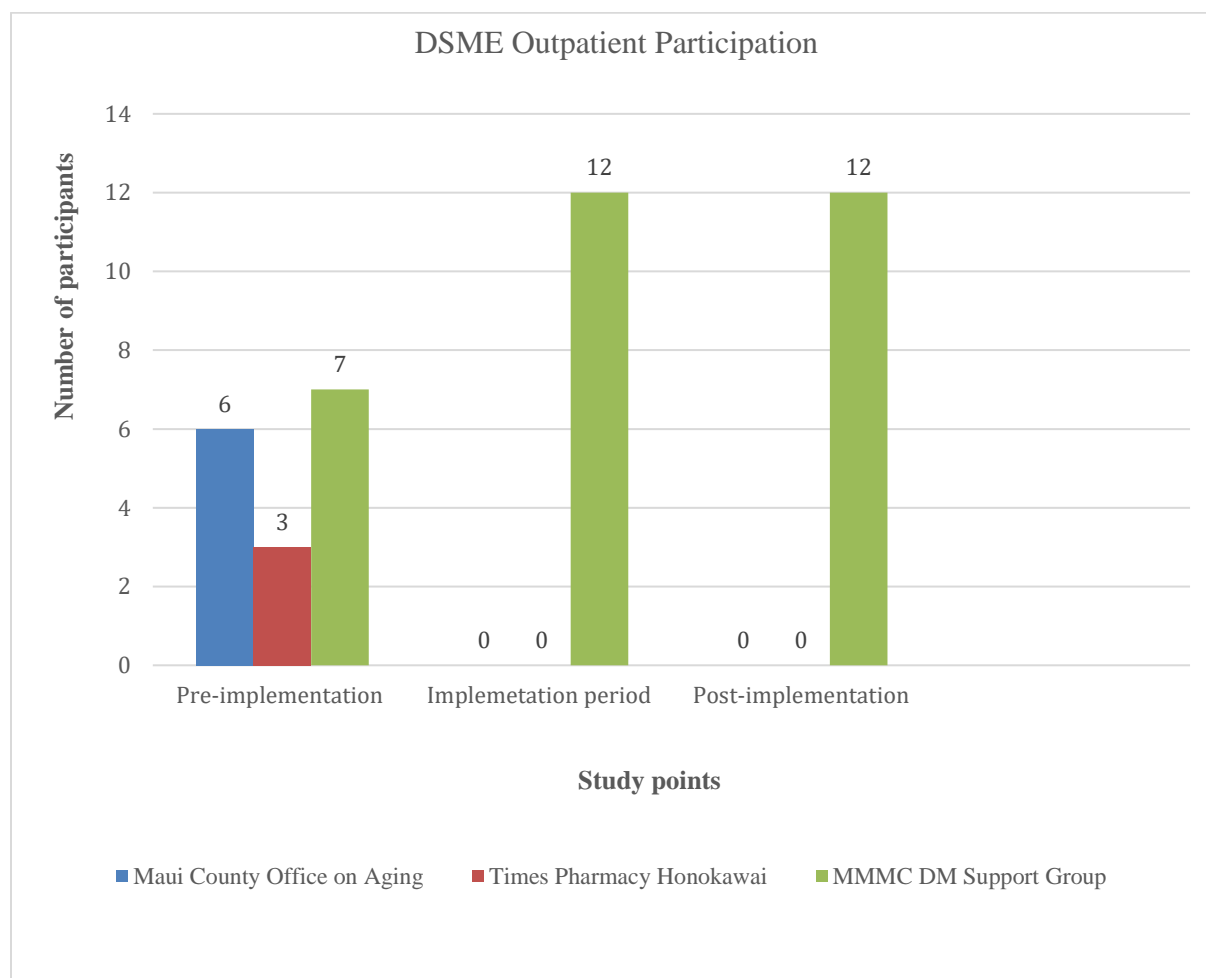


Figure 7. DSME Outpatient participation before and after project implementation

## Post-implementation Staff Survey

Staff survey about the project was conducted 2 months post- implementation using telephone and face to face methods. A random sample of 25 nurses from the 5 pilot units were asked a series of questions. Figure 8 summarized the result of the survey. Twenty-two nurses responded that having the components of the innovation imbedded in the EMR would help them remember to use these new forms especially the DM admission education checklist.

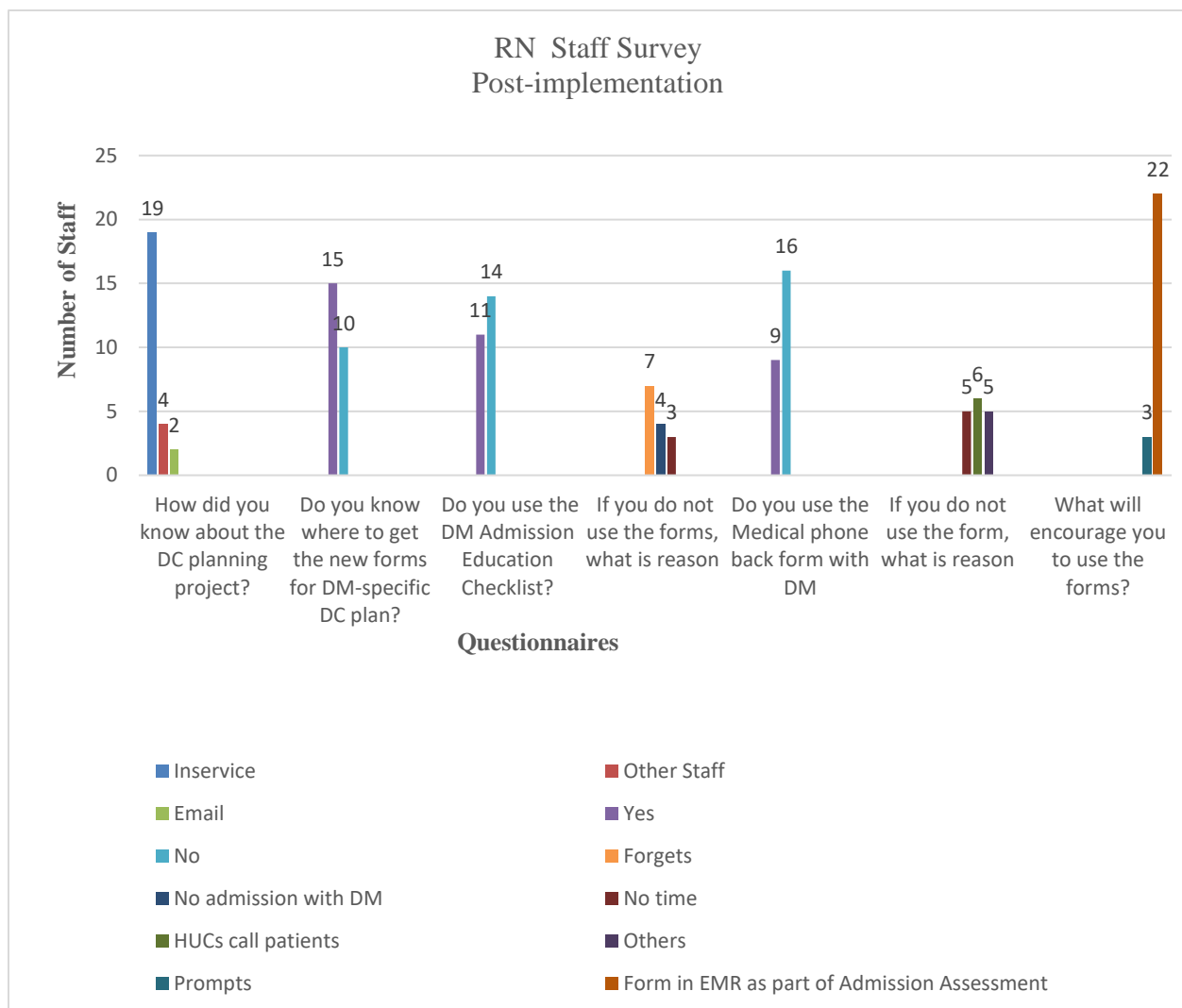


Figure 8. RN Staff Survey post-project implementation



Ten HUCs were also asked post-implementation questions regarding the project. This survey was done by phone and in person. Figure 9 illustrates the results. All became aware of the project through in-service. Most preferred to have the forms imbedded in the EMR. Those using the new call-back form stated that this was due to unit specific requirement that RNs telephone discharged patients with CHF and or Diabetes. This way their concerns, or questions are addressed immediately.

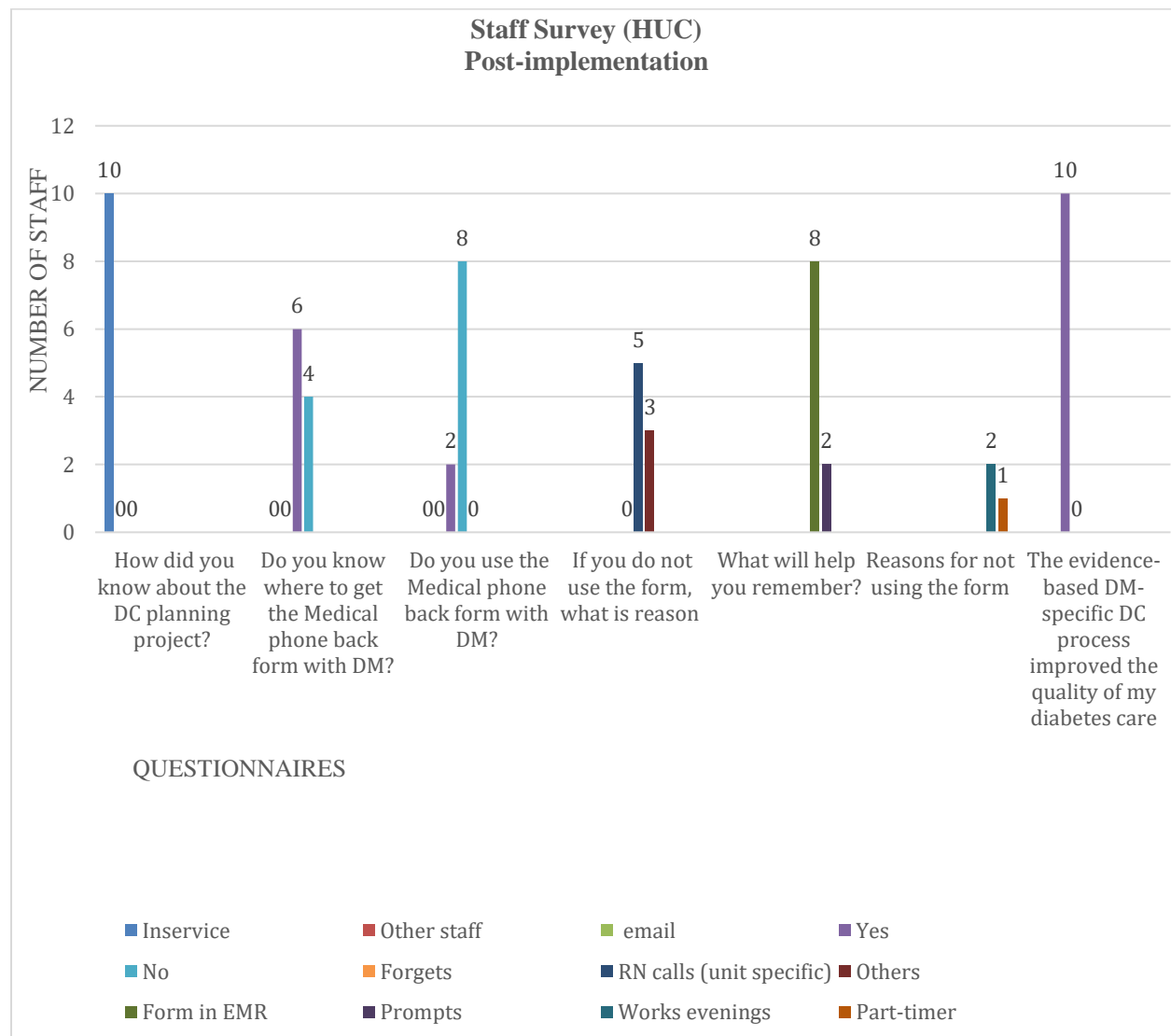


Figure 9. HUC post-project implementation survey.

## **Facilitators**

Engaged stakeholders are crucial to the success of an EBP implementation (CDC, 2011). Support from Chief Nursing Executive was instrumental in facilitating this innovation and made it possible to reduce early staff resistance while facilitating project progressions. Involvement of the Clinical Diabetes Educator was also vital in staff engagement and outpatient participation of the MMMC DM support group. What seems to encourage these patients was “giving them the self-care brochure and telling them about our support program” (personal communication, J. Uclaray, January 31, 2018).

Securing the support of the in-charge RNs through huddles further promoted project awareness. These RN group meetings provided a platform to promote awareness of the program objectives and benefits. This awareness made an Intensive Care Unit charge RN to question why their unit was not included in the project, considering that this was where diabetics with acute hyperglycemic episodes are admitted, insulin IV titrations are administered, and even discharged from when deemed stable enough to go home. Random medical record review results were shared with nurse managers and each unit’s trends were posted on nursing lounges for staff to view further facilitated adaptation. Offering gift incentives with the Pizza Party created excitement and facilitated accomplishment of project goals.

## **Barriers**

MMMC transition to Kaiser heightened the challenge of navigating policy process change. The EMR also changed from Sorian to EPIC. These changes were barely three months when the implementation was initiated. The staff were not totally adept with the new EMR system with a majority of needing additional guidance in locating the area to “chart” the DSME provided.

New forms, especially the Medical Telephone Call-back forms without barcodes, created confusion and, despite reassurance, some units were hesitant to its use due to authenticity concerns. Tracking the quantity of these completed forms were also challenging because of each units' unique way of recording and storing completed patients' forms. A couple of units make copies of the completed call-back forms and keeping them in files or folders. Others send them to Medical records after each completed call and 3 unanswered calls.

Another barrier was not being part of the organization. This delayed the project coordinator's authorizations and computer access for data management. This initially heightened resistance to the innovation and hindered practice change adaptation and data evaluation. Distance also made it difficult to follow-up and be more visually involved.

## **Summary**

This chapter discussed the implementation results and evaluation of outcomes including the description of the sample participants and other innovation findings. A description of the evolution of the project and the identification of its facilitating factors and barriers were also discussed.

The QI program implementation was initiated with the RN staff and unit HUC engagement and education. Rogers' (2003) methods of stakeholder engagement, initiatives, and other incentives were utilized to secure support and compliance. Through the utilization of an assessment tool, the objective of increasing the nursing documentation rate of the DSME provided to diabetic patients was achieved. An increase in outpatient DSME program participation, however, was only noted in the MMMC's diabetes support group.

## **CHAPTER 5. DISCUSSION**

Caring for patients with diabetes requires multi-pronged strategies to promote positive outcomes. This chronic illness requires ongoing in-hospital and outpatient self-management education and support to reduce acute and chronic complications. Evidence supports the need for a discharge planning program especially tailored for this population with a complex and chronic illness and at a high-risk for hospitalizations and readmissions (ADA, 2016).

Guided by the ADA recommendations, a discharge planning program was initiated to safely transition patients from in-hospital to a community setting to prevent acute complications and to reduce hospitalizations. As expected, there was resistance to the innovation. Utilization of Rogers (2003) Diffusion of Innovation framework facilitated project adoption.

It was anticipated that the addition of diabetes in the Medical Telephone Call back form would increase participation rate in an outpatient DSME program. However, only the Maui Memorial Medical Center Support program noted increased participation. A likely reason for the low outpatient participation would be the underutilization of the new Medical Call-back form. Only twenty completed forms were noted at the end of the study. In addition, staff were initially hesitant to use the new call back form without barcodes, which was an Hawai'i Health System requirement not required by Kaiser. The project coordinator was also unaware that the new forms need the compliance officer's approval. Subsequently, other units printed the new version while others, who requested the Medical Call forms from the compliance officer, received the "old" version without DM.

Tracking completed forms were also challenging due to every unit's variability in filing documents. A couple of units kept copied forms in folders after documenting that call-backs were completed. Another unit could not find where this binder was without their unit

secretaries. In addition, other units had their HUCs call, while others had their Charge RNs make the call-backs.

While this program has been successful in increasing nursing documentation rate thus far, sustainability is a long-term goal. This requires ongoing staff engagement and support by maximizing the use of the EHR. Not only will this meet meaningful requirements but will also streamline workflow and reduce paper usage, which is a financial advantage for the facility.

Patient participation requires a multidisciplinary approach and collaboration among hospital healthcare providers, Primary Care Providers, and the community resources. These may require conversations with nurses about the importance of reinforcing inpatient education through outpatient education as well as referrals to these programs as part of their discharge.

Direct referral to an outpatient DSME program/support program may facilitate patient participation (Schäfer et al., 2014). This is a probable reason for an increase in the MMMC's outpatient participation. As previously mentioned, the new Clinical Diabetes Educator provided patients the self-care brochure, told them the benefits of the support program, and had invited them to join in. By engaging patients, the Clinical Diabetes Educator may have inspired these patients to join the MMMC's support program.

Stakeholders and staff involvement are two factors essential in the actual facilitation of the implementation and will be necessary for sustainability initiatives of this diabetes-specific discharge planning care program. The next steps for the program includes data sharing and reporting outcomes to stakeholders to sustain the program. Outcomes will be reported to stakeholders through face-to-face meetings, presentations, and written reports. Additionally, the project can evolve to include new variables that may demonstrate the successful outcomes and needs of this project.

## **Recommendations and Implications**

### **Optimize Technology**

Recommendations from this evidence-based practice project include optimizing EMR use by incorporating the components of the diabetes discharge planning in the MMMC's nursing documentation and workflow process. This include engaging the IT team to assist in integrating these assessment tools. This team can also assist in modifying the current Discharge call-back form, already in the EMR, to include specific questionnaires focusing on a patient's diagnosis and to suit the MMMC's needs. This will help with data collection and entry to facilitate the need for the program as well as demonstrate the project outcomes. Also, utilizing the EMR reduces paper and ink expenditure, which is a potential cost-saver to the facility.

Some outcomes, which will require more data collection efforts, include tracking patients' educational needs, tracking the number of patients that are admitted with diabetes who received the DSME education, and those who were called back. Hospital and community partner collaboration will help achieve greater impacts on patient outcomes. Data sharing with other local health providers, with the use of the EHR, will help ensure the improved coordination of patient care.

### **Community Engagement**

Another recommendation includes the MMMC's hospitalist order entry of diabetic patient referral to an outpatient DSME. Evidence supports that reinforcing inpatient diabetes education through outpatient DSME promotes positive outcome and direct referral to an outpatient education program may facilitate patient participation (Schäfer et al., 2014).

### **Education**

Ongoing education to patients and providers is also necessary to utilize the most current

evidence-based practice guidelines in the management of diabetes. Utilizing the American Diabetes Association diabetes recommendations is a core aspect of Inpatient Diabetes Certification, an aim the MMMC is working to achieve. Identifying patient demographics can enhance educational processes that best suit patients' culture and backgrounds.

## **DNP Essentials**

Additional implications and recommendations are based on the AACN (2006), *The Essentials of Doctoral Education for Advanced Nursing Practice*, which serves as a guideline for the expected competencies for nurses practicing at the Doctor of Nursing Practice (DNP) level. The AACN (2006) focuses on “practice that is innovative and evidence-based, reflecting the application of credible research findings” (p. 3). The integration of the AACN's (2006) essential competencies in relation to the current EBP program is illustrated in the following section:

### ***Essential I: Scientific Underpinnings for Practice.***

The EBP diabetes-specific discharge planning program integrates scientific principles with research-based knowledge, clinical practice guidelines, healthcare systems, healthcare delivery, and evaluated new practice approaches to evaluate healthcare needs of patients with diabetes.

### ***Essential II: Organizational and Systems Leadership for Quality Improvement and Systems Thinking.***

Systems organization and leadership are essential to improving patient care and health related outcomes. The AACN (2006) stated that “doctoral level knowledge and skills in these areas are consistent with nursing and health care goals to eliminate health disparities and to promote patient safety and excellent in practice” (p.10). Through the evaluation of system level care, and the impact on patient health related outcomes and safety, this EBP project attempted to

assess diabetic patients' health proficiency and skills, identify learning needs, and explored how these can be mitigated through in-hospital and community-based educational services, while providing safe, quality, and innovative care methods. Involving the Chief Nursing Executive and Director of Nursing was important in facilitating the completion of this project.

### ***Essential III: Evidence-Based Practice and Translational Science.***

“Nurses having long recognized that scholarly nursing practice is characterized by the discovery of new phenomena and the application of new discoveries in increasing complex practice situations” (AACN, 2006, p. 11). Utilizing the EBP guidelines to improve and promote safe, timely, efficient, equitable, and patient-centered care has been emphasized by the AACN (2006) as central to the Diabetes-specific Discharge Planning program.

### ***Essential IV: Information Systems and Technology.***

The importance of information systems and technology in healthcare systems management, especially in evaluating programs of care and assessing effectiveness of care, were addressed in this AACN (2006) essentials. Demonstrating efficacy requires that technology is utilized to develop, collect, and analyze data. Technology was utilized in communicating project progress and results with stakeholders.

### ***Essential V: Health Care Policy and Ethics.***

The AACN states that health care policy, whether through governmental actions, institutional decision-making, or organizational standards, can facilitate or hinder the delivery of health care services or a provider's ability to deliver quality care (AACN, 2006). Advocating for patient safety was an important aspect of this innovation. Clinical guidelines were applied to provide standardized, evidence-based diabetes care so patients could safely transition from the hospital into the community.



### ***Essential VI: Interprofessional Collaboration.***

It is essential to have multidisciplinary collaboration and communication in caring for more complex patients and in a complex healthcare system. Thus, the DNP students are prepared to work in a team approach, utilizing leadership skills, to ensure that patient-centered care is timely, efficient, and equitable, which the Institute of Medicine (IOM) recommends. The diabetes-specific discharge planning project was approved by a group of healthcare providers physicians, certified diabetes educator, nurses, Health Unit Coordinators, and public health professionals to engage patients at all levels not only in in-patient but also across a variety of healthcare settings in the community.

### ***Essential VII: Prevention and Population Health.***

“*Clinical prevention*... as health promotion and risk reduction/illness prevention for individuals and families. [And] *Population health* is defined to include aggregate, community, environmental/occupational, and cultural/socioeconomic dimensions of health” (The AACN, 2006, p.15). The nature of this diabetes-specific discharge planning program clearly demonstrates the intent to promote health and reduce the risk of illness by adopting health promotion practices in hospitals and community-based settings and reducing the barriers and burdens of access among the diabetic population.

### ***Essential VIII: Advanced Nursing Practice and Education.***

This essential is about advancing nursing practice. It is crucial to ensure that nursing curriculum continues to advance to meet the increasingly complex health care needs. Nurses have a variety of roles and positions, and scenarios appropriate to the specialty should be developed and demonstrated. One consideration is a future diabetes care certification for the Nurse Practitioner and nurse working in the community-based diabetes care clinic. The DNP

student with specialty in Family Nurse Practitioner utilized advanced clinical judgment, evidence-based standards of care, and therapeutic relationships to build a discharge planning program to support improved care delivery and patient access to healthcare.

### **Sustainability**

Ensuring that this program is sustainable is a long-term goal. This will require project implementation on other medical/surgical units previously excluded in the pilot study. Involving the Intensive Care Unit, where insulin infusions are administered, the Pre-operative units, and the Obstetric unit will be valuable in ensuring that diabetes care is maintained, regardless of their admitting diagnosis and the unit they are located at in the MMMC.

This program will also require partnerships among stakeholders and community organizations. Cost findings demonstrate that those who are the highest-costing patients are the ones that often do not receive primary care, preventative services, or coordinated care. The Department of Health & Human Services Center for Medicare & Medicaid (DHHS CMS, 2013) continues to support efforts that reduce the number of hospitalizations. It will be important to continue to support initiatives that provide quality care at a more reasonable cost, such as this diabetes-specific discharge planning program.

### **Plans for Dissemination**

Reporting findings of this project demonstrates the need for improving delivery of care. Results reported, in a variety of methods including oral, briefs, and formal written reports/publications, will help to disseminate the program findings to a variety of audiences not only to the organization and stakeholders but also with the community partners as well.

Through publications, this evidence-based practice initiative can be adopted across other settings and other healthcare systems that utilize preventive approaches and patient education to

population that are at a significant risk for health complications, hospitalizations, and readmissions. In addition, publications help to demonstrate the comprehensive nature of diabetes care and glucose control with complication reduction efforts, the aim of which is to provide preventive measures to reduce healthcare utilization and reduce barriers to accessing healthcare.

## **Summary**

Chapter 5 interpreted the findings of the Maui Memorial Medical Center's evidence-based initiative. This chapter also described *The Essentials of Doctoral Education for Advanced Nursing Practice* and how this project integrated these essentials as required by the Doctoral program. This diabetes discharge planning program identified knowledge deficits of diabetic patients in the hospital setting, increased nursing DSME documentation, identified methods to increase outpatient DSME participation, made a record of diabetes education program in the community, and recommended that fully utilizing the EMR would help sustain the innovation and improve MMMC's quality of care. Incorporating innovations in the EMR will facilitate the tracking of project outcomes. Increasing data sharing with local clinics and community programs may further facilitate the adoption of the components of this program. Finally, plans for dissemination were discussed with hope that stakeholders continue to participate in this initiative of providing quality diabetes care.

## Appendix A

### Diabetes Education Admission Checklist

Patient name \_\_\_\_\_

#### SELF-MANAGEMENT SKILLS ASSESSMENT-To be started on admission

Use this to assess all patients with a diagnosis of diabetes to assess their understanding of diabetes self-management skills.  
Provide the Diabetes Discharge Instruction Brochure\*

	Provide handouts of topics below if patient needs more detailed information
<b>Diabetes-General</b>	Hemoglobin A1c test
o Do you know what is an A1C test? What is your A1C goal?	
<b>Medication Management</b>	Select Appropriate Medication Handout if needed
o What medications do you take to control your blood sugar?	
o How many times a week do you end up not taking your medication for blood sugar?	
<b>Nutrition Management</b>	Diabetes diet
o What type of meal plan do you follow? (ex. Small frequent meal, plate method, counting carbs)	
o In the last week, how many days of the week do you follow your meal plan?	
<b>Exercise</b>	Exercise: The Basics
o What type of physical activity do you do? How often? (times per week, length of time?)	
<b>Signs and symptoms of hyper and hypoglycemia</b>	Hyperglycemia and/or hypoglycemia Instruction, Adult
o Do you experience low blood sugar at home? What do you consider low?	
o How do you treat a low blood sugar? How do you handle a high blood sugar?	
<b>Importance of blood glucose monitoring</b>	Blood Glucose Monitoring
o Do you check your blood sugar at home? How often? What is your blood sugar target?	
o Do you have all the supplies you need to manage your diabetes at home?	
<b>Sick day &amp; Emergencies</b>	Sick Day Management For Diabetes
o How do you handle your blood sugar monitoring and your diabetes medications when you are sick?	
o When is diabetes an emergency and what should you do?	

RN Signature \_\_\_\_\_

Date/Time \_\_\_\_\_

Based on nursing assessment of self-management skills, choose one of the following options:  
(RN is responsible for education when DM educator is not available)

O Patient is not applicable for education or is refusing education.

O Explanation:

O Patient is competent in diabetes self-management skills and no further education is required.

O Patient requires additional Education.  
Select one:  
RN to complete education and document  
Or Consult Diabetes Educator

# The Diabetes Self-Care Brochure

## PROTECTING YOUR FEET

### Action

Take off your shoes and socks each time you visit your health care provider

- ▶ Examine the top and bottom of your feet every day. Use a mirror to help you if necessary
- ▶ Wash your feet every day with mild soap and warm water (test the water with your elbow or wrist)
- ▶ Apply lotion to top and bottom of your feet – NOT BETWEEN TOES
- ▶ Shoes and slippers should:
  - cover your feet fully
  - be comfortable and fit well
- ▶ Do Not:
  - walk barefoot
  - soak your feet
  - use heating pads or hot water bottles to warm your feet
  - treat skin and foot conditions
- ▶ See your doctor right away if you notice:
  - reddened areas
  - swelling, blisters or cracks on your skin
  - change in feeling or temperature
- ▶ See a Podiatrist if you are not able to cut or trim your nails.

### IMPORTANT RESOURCE

American Diabetes Association at  
<http://www.diabetes.org/>

## BEING ACTIVE OR EXERCISING

This will help you control weight, lowers blood sugar and can prevent heart disease and other problems.

### ▶ If you take insulin:

- do not inject it into the body area you are exercising. Do not inject it COLD into your body
- ▶ You can have low blood sugar many hours after you exercise

### Before you exercise

- talk with your doctor.
- test your blood sugar.
- eat a snack if your blood sugar is less than 100 mg/dl.

### Action

### Remember to:

- ▶ Carry a fast-acting sugar
- ▶ Wear shoes and socks that fit
- ▶ Drink plenty of water before, during and after exercise
- ▶ Stop exercising if you are short of breath, feel faint or have pain
- ▶ Talk with your doctor about these problems before you exercise again
- ▶ Eat a snack if you are exercising for more than 45 minutes
- ▶ Test your sugar right away if you feel signs of low blood sugar
- ▶ If you cannot test, treat anyway just to be safe
- ▶ Wear a medical identification (so that someone will know you have diabetes in an emergency)

## Hemoglobin A1C

Based on the attachment of glucose (blood sugar) to hemoglobin (the protein in red blood cells (RBCs) that carry oxygen). These RBCs typically live for about 3 months.

- ▶ Reflects your average blood sugar levels over the past 3 months. Below 7 is generally acceptable.
- ▶ Discuss your A1C goal with your doctor.

## APPOINTMENTS & FOLLOW-UPS

### Action

Make sure you have all your diabetes prescriptions such as:

- blood glucose testing (meter, strips, lancets)
- medication (pills, insulin vials, insulin pens). Insulin should not be injected cold.
- syringes, pen needles.
- ▶ Talk with your doctor about when and how often to test your blood sugars. Record your blood sugar results in a logbook to review with your doctor.
- ▶ Ask your doctor to refer you to an out-patient Diabetes Self-Management Education Program or a Clinical Diabetes Educator
- ▶ Test your blood sugar more often (4 to 6 times a day) or as discussed with your doctor.



A community hospital affiliated with KAHOE PAMANAHE.

## DIABETES SELF-CARE EDUCATION BROCHURE



### IMPORTANT TELEPHONE NUMBERS

- Maui Memorial Medical Center:  
(808) 244-0056 x 5773
- Diabetes Self-Management Education Programs (Maui):
- Hui No Ke Ola Pono:  
(808) 244-4647
  - Maui County Office on Aging  
(808) 463-3186
  - Maui Medical Group:  
(808) 984-7438
  - Kaiser Outpatient Clinic  
(808) 243-8000
  - Times Pharmacy Honokowai  
(808) 861-8008

## The Diabetes Self-Care Brochure

### HIGH BLOOD SUGAR

Can occur if you eat too much food, are ill, under a lot of stress or do not take enough medicine.  
Signs: tiredness, urinating often, feeling thirsty and having blurry vision.

**Action**

Call your health care provider if you have unexplained blood sugar of 200 mg/dl or greater for 2 days  
▶ Monitor your sugar level every 4 hours or as advised by your doctor

### SICK DAY RULES

When you are sick, your blood sugar level is harder to control.

**Action**

Call your health care provider if you: cannot eat, vomiting, having diarrhea, or having continued high blood sugar.  
▶ Test your blood sugar more often (4 to 6 times a day) or as discussed with your doctor  
▶ Keep taking your diabetes medications  
▶ Drink at least one cup of water or other sugar free and caffeine free drinks each hour  
If you cannot eat your usual meal, have one of the following 15 grams of carbohydrate every 3 - 4 hours

- ½ cup fruit juice
- 1 cup milk
- ½ cup regular soft drinks
- 6 saltine crackers
- 1 cup soup
- ½ cup ice-cream

### LOW BLOOD SUGAR (Sugar less than 70 mg/dl)

Can occur when food, exercise and diabetes medicine do not balance.  
Such as:  
▶ Too little food and delay in meals  
▶ Too much exercise  
▶ Too much medication

**You may feel -**  
Shaky, hungry, sleepy or tired, sweaty, confused, dizzy, restless during night time sleep.

**Action**

▶ If you feel symptoms of low blood sugar, test your blood immediately if you can  
▶ If you are unable to test, treat right away with one (1) of the following 15 grams of fast acting sugar:  
• 3 glucose tablets or 3 hard candies  
• ½ glass (4 ounces) fruit juice  
• ½ glass regular soda  
▶ Re-check your sugar 15 minutes after treatment or as soon as you are able. If it is above 70 mg/dl eat a snack if your next meal is more than 1 hour away.  
▶ If it is still below 70 mg/dl, repeat the treatment  
▶ If you do not feel better, call your health care provider or call 911

### YOUR PLATE FOR MEAL PLANNING

### HEALTHY EATING

Having diabetes does not mean you have to give up all the foods you enjoy, but it does mean you have to control your portion sizes. Learning to eat healthy meals is an important part of your management.

▶ Ask your health care provider to refer you to a dietitian

▶ Learn how different foods and the amount eaten affect your blood sugar

▶ Eat 3 meals a day; eat 2 snacks a day.

**DO NOT SKIP MEALS**

▶ Balance your meals: include sources of carbohydrate, protein and/or healthy fats

**Include daily:**

- 1½ cups vegetables
- 2 – 3 servings of fruit
- 1 – 3 cups low fat milk or yogurt

### READING NUTRITION LABEL

**First: Check Serving Size**  
The serving size for this food is 1 cup  
There are 2 servings or 2 cups in this container

**Nutrition Facts**

Serving Size 1 cup  
Servings Per Container 2

Amount Per Serving	1 Cup
Calories 250	Calories from Fat 110
% Daily Value*	
Total Fat 12 g	18%
Saturated Fat 3 g	15%
Trans Fat 1.5 g	
Cholesterol 30 mg	10%
Sodium 470 mg	20%
Total Carbohydrate 31 g	10%
Dietary Fiber 0 g	0%
Sugars 5 g	
Vitamin A 4%	Vitamin C 2%
Calcium 20%	Iron 4%

\*Percent Daily Values are based on a diet of other people's misdeeds.  
†Percent Daily Values are based on a diet of other people's misdeeds.

	Calories	2,000	2,500
Total Fat	Less than	65 g	80 g
Saturated Fat	Less than	20 g	25 g
Cholesterol	Less than	300 mg	300 mg
Sodium	Less than	2,400 mg	2,400 mg
Total Carbohydrate		300 g	375 g
Dietary Fiber		25 g	30 g

Calories per gram:  
Fat 9    Carbohydrate 4    Protein 4

**Second: Check Total Carbohydrate Content**

The Total Carbohydrate tells how many grams of carbohydrate are in 1 serving. 15 grams of carbohydrate is equal to 1 carbohydrate serving.

Fiber (g) is included in the total carbohydrate amount.  
Sugar is already included in the total carbohydrate amount. This value shows the total amount of both natural and added sugars.

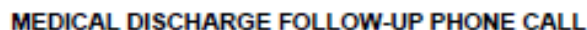
Form 300-xxxx Approved on 3/07/17 by:  
The Maui Memorial Medical Center POC Committee

## Medical Discharge Follow-up Phone Call

\*DC0052\*

MEDICAL DISCHARGE FOLLOW-UP  
PHONE CALL

## Medical Discharge Follow-up Phone Call

[illegible]MEDICAL DISCHARGE FOLLOW-UP  
PHONE CALL



## Appendix D

### Marketing/Communication Plan

<b>Communication Mechanism</b>	<b>Activities</b>	<b>Target Date</b>	<b>Lead Contributors</b>	<b>Recipient</b>
<b>Meetings, emails, telephone calls</b>	Introduce QI project	Before start of project	Project Coordinator	Chief Nurse Executive/DON, Content Expert, Quality Manager, Clinical Diabetes Educator
<b>Flyers, pre-work shift huddles, in-services, verbal communication to staff, emails</b>	Staff Education	Initiation of project	Project Coordinator	Nurse managers, Staff nurses
<b>Emails</b>	Tracking	Will be monthly	Project Coordinator	Staff nurses in 5 medical/surgical units, CNE/DON, Content Expert, Quality Manager, Clinical Diabetes Educator
<b>Pre-work shift huddles, in-services, emails</b>	Changes to project	As needed and as changes occur	Project Coordinator, Content Expert	Staff nurses in 5 medical/surgical units, Nurse Manager
<b>Presentations at meetings</b>	Evaluation	2 months after end of project	Project Coordinator	CNE/DON, Nurse Managers, POC, Clinical Diabetes Educator

## Appendix E

### Pre-implementation Data Collection Tool

Date Chart check	Date of Admission	Age	Sex	Admitting Diagnosis	History New/Chronic	Admission Diabetes Education	Diabetes Education during hospital stay
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\*Each column represents parameters utilized to review medical record of patients with Diabetes Mellitus who received Diabetes Self-Management Education upon admission.

## Appendix F

### Post-implementation Medical Record Review Data Collection Tool

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Unit Chart check	
Date of Admission	
Date DSME completed	
With checklist	
Admitting Diagnosis	
Age	
Sex	
Ethnic Background	
Admitting diagnosis	
History	
DM Type	
Admission Diabetes Education	
Diabetes Education during hospital stay	

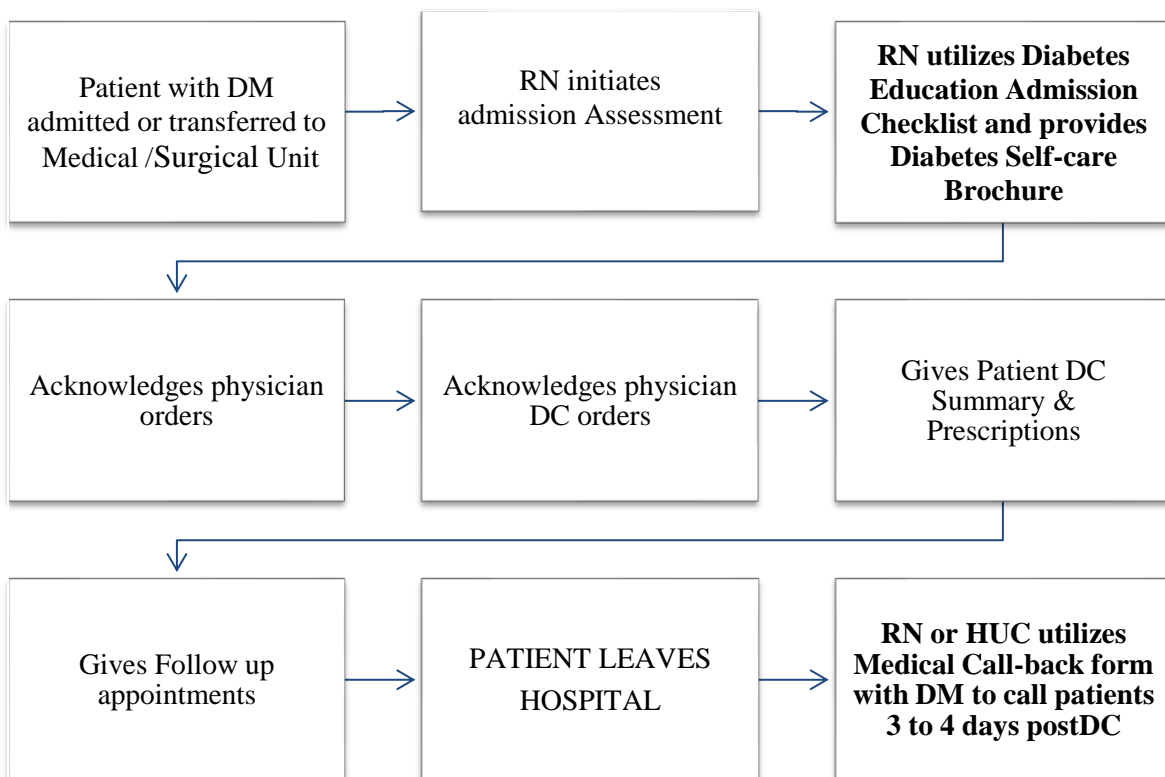
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\* Each column represents parameters utilized to review medical record of patients with Diabetes Mellitus who received Diabetes Self-Management Education upon admission.

## Appendix G

### Schematic of the Discharge Planning Process at MMMC

The discharge planning process at MMMC is initiated on admission and continues through discharge. The EBP interventions (boxes with bold text) include the use of the Diabetes Education Admission Checklist to assess diabetic patients' baseline self-care knowledge upon admission and transfer from other units. RNs will also provide the pre-preprinted Diabetes Self-Care Brochure. Forty-eight to seventy-two hours after discharge, those with DM will also receive additional questions specific to their diagnosis guided with DM specific questions on the new Medical Discharge Telephone Call-back form.



## Appendix H

### The SMART Criteria for Evaluation Questions

Specific (Intervention & target population)	Measurable (Outcomes)	Achievable	Realistic	Time-Bound
a) Nursing staff identify diabetic patient educational need through use of an admission education assessment checklist	1. 80% increase in nursing documentation of diabetes education 2. 50% increase rate of participation in outpatient diabetes education program	Yes, the evaluation question will be answered in the planned 6-month time frame with the available resources and support	Yes, the evaluation question addresses the organizational triggers that motivated the program evaluation	Yes, the evaluation question includes a timeframe
b) Nursing staff use of teach-back evaluation to assess diabetic patient understanding of education				
c). Nursing staff use of the Medical Discharge Telephone call-back form with DM, 48-72 after diabetic patient discharge.				

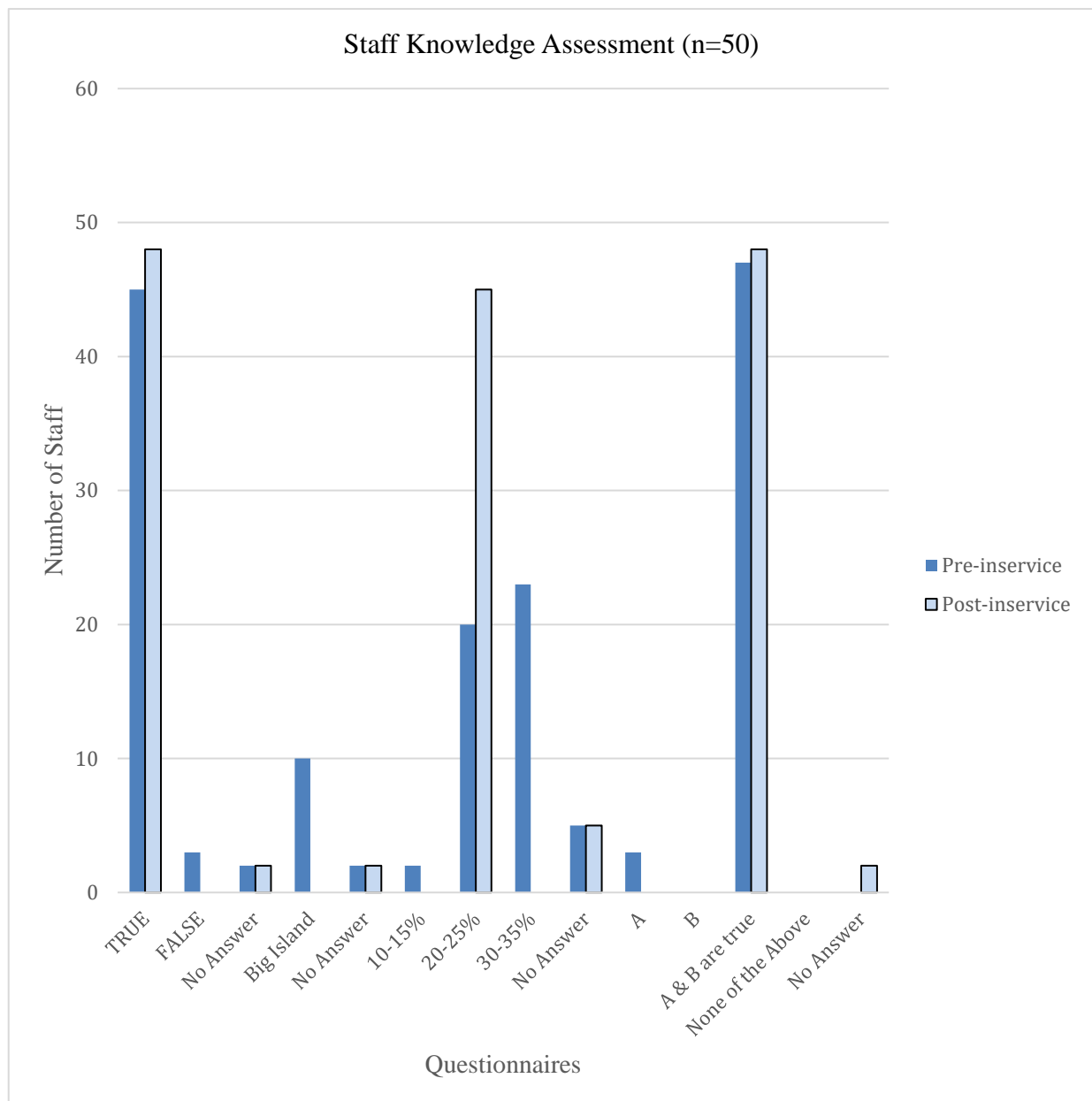
## Appendix I

### Pre-and Post-in-service Knowledge Assessment Questionnaires

1.	Regardless of their admitting diagnosis, diabetics should have their baseline knowledge assessed a. True b. False
2.	Which county has the highest rate of hospitalization a. Kauai a. Oahu b. Maui b. Big Island
3.	An estimated____ of hospitalized patients have DM a. 10-15% b. 20-25% c. 30-35%
4.	Which of this/these statements are true? a. Evidence supports focusing on the needs of those with diabetes regardless of their admitting complaints and diagnosis. b. Discharge planning initiated on admission can safely transition diabetic patients from hospital to home and possible prevent complications and hospitalization c. A and B true b. None of the above
2.	A requirement of the Joint Commission (TJC) Advance in-patient Diabetes Certification is assessment of patient's knowledge of Diabetes Self-Management and providing patient education. a. True b. False

## Appendix J

### Pre and Post In-service Knowledge Assessment Results



## Appendix K

### Summary of Cost Associated with Diabetes and MMMC Cost in Implementing the EBP Project

<b>Cost of EBP practice change</b>	<b>Cost Associated with Diabetes</b>	<b>Diabetic care cost at MMMC</b>
<ul style="list-style-type: none"> <li>• Pay: \$5.5 x 2100 (admitted patients with DM, 2013) = \$11,550</li> <li>• Paper (\$457.86)</li> <li>• Ink (\$600.00)               <ul style="list-style-type: none"> <li>• TOTAL cost: \$12,607.86</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Per diabetic person care: \$13,043.48</li> <li>• Cost of Amputations: \$20,167</li> <li>• Average cost of a readmission for any given cause: \$11,200</li> <li>• Penalty of \$528 million across all hospitals in 2017; approximately \$95,066.62, hospital</li> <li>• The 2012 average cost per premature death was approximately \$75,100 per case</li> <li>• An average of \$166 per person per day loss of earnings for those who leave work early due to disability; approximately \$1,000 loss of earnings per day in Maui county</li> <li>• Approximately \$185 per person per day in 2012. The labor cost loss Maui is approximately \$1,110 per day (number of diabetics multiplied by \$185).</li> </ul>	<ul style="list-style-type: none"> <li>• 2100 Diabetic patients = \$27,391,308.00 per year</li> <li>• 329 diabetics were readmitted at MMMC in 2015 = \$3,684,800 per year</li> </ul>



## Appendix L

### Project Timeline

Task	2017												2018					
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J
Phases I to III 1/15/17 to 5/15/17																		
Submit Chapter 1-3 to Project Chair																		
Successful Proposal Defense																		
Brief Key Leaders & Staff																		
Develop Marketing Products																		
Prepare Instruments for Distribution																		
Educate Staff																		
Phase IV Pilot Project (5 Med/Surg Units)																		
Re-enforce Education																		
Collect Data																		
Enter Data																		
Phase IV Analyze Data																		
Interpret Data																		
Prepare & Submit for Dissemination																		
Plan for organizational implementation																		

## Appendix M

### Diabetes Self-care Outpatient Group Evaluation Result

Questions	Not at all	Maybe	Fair	Good	Very Good	Excellent	Comments
The Diabetic Self-care brochure is easy to read			3		1	3	Good to have in different language
The Diabetic Self-care brochure is easy to understand			3		1	3	Visuals are great, make important phone number info BIGGER
The Diabetic Self-care brochure will be helpful in managing my diabetes at home			2	1	1	3	Interesting and informative

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